COAL AGE

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What "Getting Together" Will Do

Recently I met a mine manager friend to whom about a year ago I recommended a live young fellow for mine storekeeper. I noticed an unusual cordiality in his greeting, and when in reply to my "What's the good word?" he came back with "Get together," I knew he had something to tell me. What he had was so good that I want to pass it to the rest of the fraternity.

Briefly it ran like this:

The man who took charge of his storehouse was not the ordinary kind. It took him only a few days to discover that there was enough of certain materials and spare parts on hand to run that mine for years. Take the item of packing: He found three brands of the same general class and enough of each one to run the mine three years. Now every mine man knows that packing is apt to deteriorate with age, and nine years is a long time There was no evidence to be found that the same packing salesman ever hit that place twice, for when a salesman of any commodity overstocks his buyer to that extent you can gamble that he isn't figuring on coming back soon. Luckily, that type of salesman is growing extinct.

Our storekeeper found the whole stock out of all proportion to requirements. There were dozens of certain size valves, good but seldom called for. Right on top of this an order came through the engineering department specifying a lot of new valves of certain sizes for a new spray system. My friend admitted that when the new storekeeper came and told him that if he would O.K. a slight change in the size of the main supply lines for the new system, he could save the purchase of all the new valves, and most of the line, he couldn't believe it. But it was done.

Then the storekeeper told him that if he would call a meeting of the various foremen, master mechanics, boss carpenters and all concerned in the cost of that mine, to canvass the store stocks together once a month, he would save him still more. That too was done. Material, as good as could be purchased new, was uncovered that nobody knew was on hand. It was put into service as fast as needed. The saving in a year's time ran into thousands.

That, however, was perhaps the least that was accomplished as a result of this getting together on the part of the foremen. A better working spirit was brought about, departmental friction was eliminated, committees of the workmen were formed to meet with the foremen at certain intervals to discuss improvement of working conditions, and all that kind of thing. The Safety-First work, which had languished for want of real co-operative spirit, took on new life; and the First-Aid Corps of that mine took the prize at the next district contest.

The storekeeper who the manager said was entitled to credit for the "Get-Together Spirit" has had two raises and is going to get a bigger job. As for the manager himself, he said he had been paid already in having a force that was pulling together. "But," he added, "My folks are watching the old mine run and Christmas is coming for all the gang."

YOU MINE MANAGERS who get so much free advice—you wouldn't throw away a real honest-to-goodness dollar, would you? Certainly not; but many a perfectly good dollar is buried around your mine storehouse that ought to be in the company's bank account.

Don't overlook the natural gregariousness of men as an avenue of quickening interest in operations and affording an outlet for the talent and genius that maybe is bottled up in some of your employees.

Begin to have some meetings in your organization. Hold them regularly. Don't wait 'till records are broken before you pass the cigars around. Lots of concerns are finding it pays big to hold departmental meetings almost daily, and these are getting results that could be achieved in no other way.

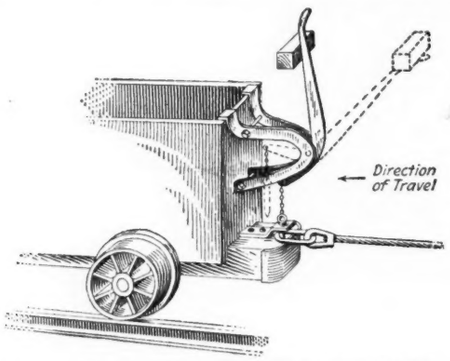
Men like to air their ideas, and they like to get together in the spirit of work as well as in play. See what "Getting 'em together" will do for your concern.

Ideas and Suggestions

A Handy Rope-Detaching Device

By R. Z. Virgin*

At one mine a man was dispensed with and a dangerous job eliminated by having a tool made to uncouple the rope at the foot of an incline. The device is fastened



DEVICE AUTOMATICALLY RELEASES ROPE AT FOOT OF PLANE

to the rear end of the trip. It pulls the pin, detaches the rope, and the trip runs onto the siding.

The overhead knocker is placed at the point where the rope is to be attached to the loaded trips to make the return journey up the incline.

Gathering Experience

By J. F. K. Brown†

Rufus R. Strohm recently had a small but vivid poem in *Coal Age* (Oct. 14, page 635) under the title "The Rolling Stone," in which he gave his opinion in favor of the "stay-at-home" man as against the "vagabond." No doubt there is much to be said in favor of the man who does not knock around, and the vagabond not infrequently turns out a worthless sort of workman. But does it not seem that there must be a line of action somewhere between these two extremes, which if followed, would be much to the advantage of the man who carried it out?

The man who stays at home, while he may gather the moss, only gathers it in proportion to his knowledge and ability; that is, if we accept the dictum that a man is paid for what he knows—in other words, his knowledge and experience. The pertinent question is then forced on our attention, to just what extent is a man's knowledge and experience improved and expanded by staying always in one spot? It is obvious that he can only get to know the conditions in his particular mine and district. We have been told time and again that mining knowledge is not to be gained from books, so our stay-at-home friend has a poor chance, seemingly, of becoming a man of any except local experience. What chance has such a man to obtain or rise to a post in any other field, where his experience is nil and his knowledge even less?

Of course the argument against this is that the man does not need to leave his own district. But it cannot be guaranteed that he will there find work congenial to himself and a salve to his presumed ability. To take this standpoint would seem to be giving in to a narrow view of conditions. Moreover, the question arises as to whether the man's district is expanding sufficiently fast to take care of the rising generation of miners that desire to make of themselves foremen or managers.

Furthermore, it seems obvious also that where such a policy is in force, or being followed out literally, such a district must be far behind in the general progress of the mining industry. In all probability methods and machines are still in use there that have long ago been left behind or scrapped in the interests of economy or safety elsewhere. It is in such districts that the safety and the efficiency movements either fail to get a hold or get started only long after other districts have awakened to their possibilities.

In effect this stay-at-homeness breeds a sort of contempt for outside practices, a self-sufficiency in conditions as they exist and a dislike of outside advice and help that is sometimes strongly expressed. Outside mining men come into such a district and are shown grandly round with much expressed pride in a state of matters about which in reality there is nothing to be proud. They are asked their opinion of all the wonderful things they have seen with a smirk of self-satisfaction which means, "Look how we do things here."

If the outside man has an axe of his own to grind, he swallows his disgust and praises what he has seen to the skies. But if he is honest to himself, he begins to tell his guides about some of the things that are better done elsewhere and thereby earns the undying hatred of the district. Like all such cases of ignorance, where knowledge is absent, comparison cannot be made from the stranger's utterances, and so his statements stand condemned. This is by no means an unusual picture. Ask yourself why it is that some districts are progressive and open to receive and develop new ideas, while others present the opposite characteristics.

The rolling stone is probably the man with ideas and ambition above the average of his district. He is to some extent compelled to seek new and broader pastures, because he wishes to advance. He wants to know what other people are doing elsewhere; so for some years he travels from district to district and country to country.

Who can doubt but that by so doing he acquires a broader experience, a greater knowledge and a better ability to understand and manage. Most important of all he becomes alive to the meaning of the word progress and realizes that merely standing still without any effort to alter conditions for the better does not mean coal production at its best, either for the employee or the employer.

There is danger, of course, that the desire to wander may become a chronic condition, and it is doubtless to this state that Mr. Strohm refers. But provided that

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†Sydney, N. S.

there is a limit set to wandering, it is not a bad way in which to acquire experience and knowledge that can later be capitalized. Doing so almost amounts to going through unconsciously what the universities and colleges prescribe as training for engineers, the winter months being spent in learning the theory of the profession and the summer months in the field, shifting from one district to another in order that the experience acquired may be broad.

Finding Splinters in Fingers

Those who have to practice "first aid" in mines and reduction works will probably find the following of great help: "Location in a busy clothing manufacturing district gave rise to the necessity for a simple method of determining the presence and location of foreign bodies, such as needles and splinters, in fingers," says Dr. Roscoe H. Webb, in the *Journal* of the American Medical Association. "A piece of black woolen cloth 8 in. square was fastened to a piece of adhesive plaster of equal size, and in the center an oval opening was made measuring five-eighths by one-half inch. By placing this over an electric light supplied with a reflector and placing the finger over the hole, excellent transillumination is obtained, and by making pressure with a pointed instrument over the suspected area, the object can be brought out more clearly. If the field is rendered bloodless while operating, the finger may be placed over the opening and the object can be again accurately located. This device is simple, inexpensive and indestructible. It is more easily adapted than pocket flashlights, etc., to the finger, and reduces to a minimum the number of cases requiring röntgenograms. Daily use for the last six months by several workers in the accident room has proved its efficiency."

A Frogless Switch

By Le Baron Smith*

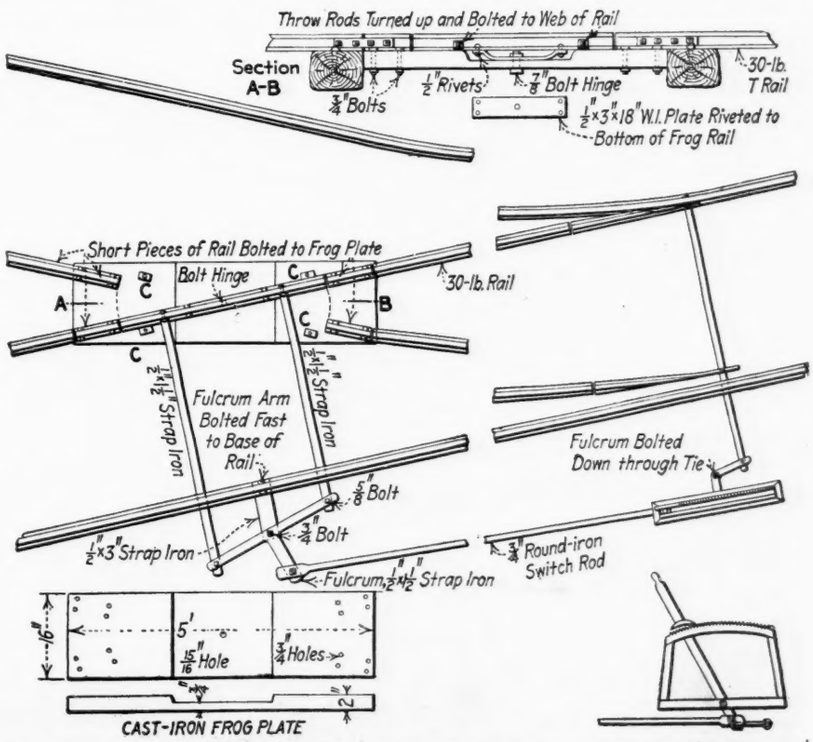
A frogless switch has been in service in the No. 1 shaft of the Morrisdale Coal Co. since October, 1914, and a brief description is herewith presented with the thought that it may be of interest to others.

The switch is adapted particularly for use on main electric haulage roads, at partings which must be frequently traversed by mine locomotives.

It is a well-known fact that much trouble is experienced at these points in the maintenance and upkeep of switches, using ordinary frogs, owing to the locomotive wheels becoming grooved at certain times to a depth, which while not justifying a change of wheels, often causes a broken frog or a derailment, entailing delay and expense.

In the accompanying drawing it will be seen that the frog is replaced by a pivotal rail, arranged at the juncture of the convergent rails of the main and branch tracks. This pivoted rail is connected by two bridle bars and a throw rod to the same switch lever which operates the latches. When the switch lever is thrown to one side, setting the latches for the branch track, the pivotal rail forms a part of the branch track, and when the switch is reversed for the main track, it becomes a part of the main track. The drawing shows it in the latter position.

The pivotal, or swinging, rail section is fastened to an iron baseplate, having a depression in the center which allows room for the pivot hinge. Four short pieces of rail are bolted to the plate, one at each corner, their angle of convergence forming what would ordinarily be termed the angle of the frog. Each of these rail sections is drilled



PARTING SWITCH WELL ADAPTED FOR USE ON ELECTRIC HAULAGE ROADS

for fishplates, to connect with the abutting rails. The baseplate is also well spiked to the ties, making the whole solid and rigid. Small plates *C* are bolted to the base, to limit the throw of the swinging rail and insure its proper alignment with the connecting rails.

This switch is located at the main parting near the bottom of the shaft, at the juncture of the loaded and empty tracks. It is always set for the loaded trips coming out, the brakemen on the empty trips opening and closing it as they go in. It has been in continuous operation for two years, with a daily average of 60 to 70 motor trips (about 1,300 cars) passing over it, has not cost one cent for repairs and has given perfect satisfaction. The motormen are much in favor of it, there being no jar or jumping of the locomotive in passing over it when the wheels are worn, as is the case in running over the ordinary frog.

The switch, which is patented by W. R. Ross, trackman at the Morrisdale No. 1 shaft, has many points of merit, but unfortunately has never been brought before the mining fraternity, or received any publicity whatever. Consequently, it gives me considerable pleasure to offer this description for publication in the columns of *Coal Age*.

*Mining Engineer, Morrisdale Coal Co., Morrisdale, Penn.

Coal Mining in Northern Wyoming

By M. F. Peltier*

SYNOPSIS—The coal of the Sheridan field is of recent geological origin. The deposits are numerous and thick, the coal being a black, lustrous subbituminous with low sulphur content, making an excellent domestic or boiler fuel. Shafts, slopes and drifts are employed in reaching the coal beds, and the panel system of mining is followed exclusively. Because of tender roof, top coal must be left up. When this is done no timbering is required.

A radical difference exists between the coal regions of Wyoming and those of the Eastern states where bituminous coal is found. The coal of the Sheridan field is of a more recent geological formation than that in the East, and the effects of age and pressure have not had an opportunity to assert the same influence. In the Eastern coal fields the change from the lower grades to bituminous and anthracite has been gradually and uniformly accomplished. In the Sheridan field the formation is so recent that only the sub-bituminous coal has been produced.

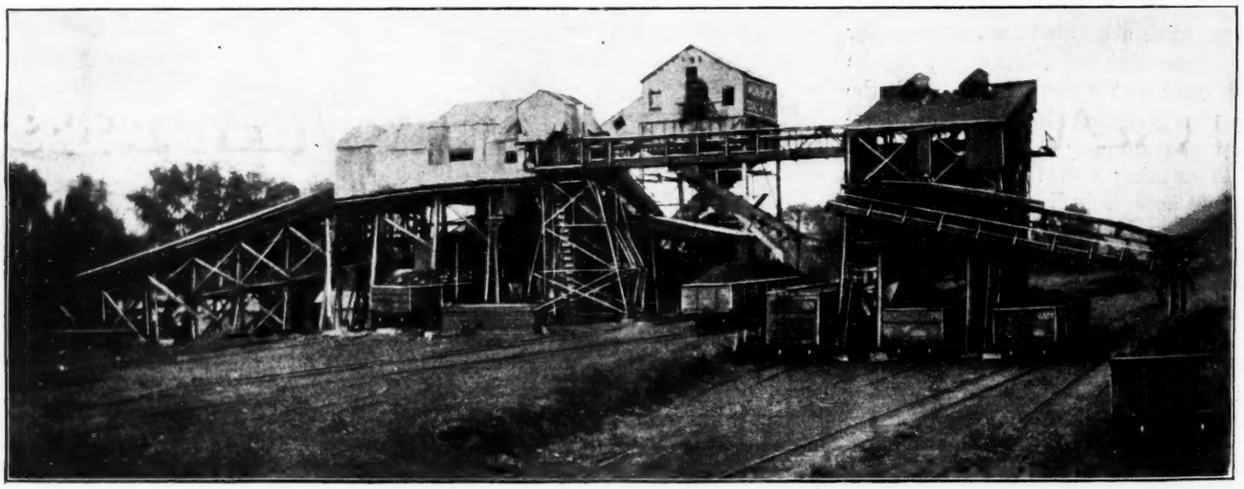
The Sheridan field is known as the Tongue River group. It is located in the northern part of Wyoming near the Big Horn Mountains. The coal-bearing rocks have been divided into two parts called the upper and lower measures. The Carney seam is approximately the dividing line. The rocks are composed of soft shale and sandstone alternately stratified.

Chemical analyses show that the coals of the Sheridan district as a whole have higher heat value and are therefore more efficient fuels than the best grades of lignites. These coals are distinctly black and have a luster, in this respect being unlike the lignites, which are more generally colored brown. Because of their general homogeneous texture, blackness and high fuel value, they are easily distinguished from lignite. They are distinguished from bituminous coals chiefly on account of their high percentage of moisture and inability to withstand the weather.

The coal of the Sheridan district is classed as subbituminous and burns to a clean, white ash, making no clinkers or soot and containing only a trace of sulphur. With these properties it makes an admirable domestic fuel and is also a good steam producer.

According to the United States Geological Survey there are 13 seams of coal in the Sheridan district, which aggregate in amount 140 ft. Individual beds range from 34 ft. down to 5 ft. in thickness. The Monarch Coal Mining Co. has demonstrated by drilling with a diamond core drill on its property that there are four workable seams of coal above the waters of Tongue River, and three workable beds below it. The Geological Survey states that the greatest quantity of coal that is contained in any single area of continuous coal-bearing rocks is found in the region of Wyoming, Montana and the Dakotas.

Commercial mining began in this field in 1893, when approximately 50,000 tons of coal was produced. The rate of production has rapidly increased up to the present time and has now reached 1,250,000 tons yearly. The five principal coal companies in the field are operating five different mines, and one additional new mine has been opened by shaft in the center of the district. The five operating companies have a daily capacity at each mine that ranges from 1,600 to 2,500 tons and totals 10,000 tons per day. I can safely predict from an examination of their plants, equipment for mining and loading, that these companies could produce 3,000,000 tons per year if they had a market for their product. The five companies at the present time employ approximately 2,000 miners.



MONARCH TIPPLE AND SCREENING PLANT

Three varieties of mining—shaft, drift and slope—are represented in the district. Since the field has been in operation there never has been an explosion that has resulted fatally. The mines are practically dry and free from gas. The element of danger that must be guarded against is fire. After the pillars are drawn and the roof has fallen, the coal is liable to spontaneous combustion. To guard against this the mines are worked on the panel system, which enables the operator to close up immediately any portion of the mine which might be affected.

*President, Monarch Coal Mining Co., Monarch, Wyo.

The most important seams are the Monarch, Carney and Dietz. All are less than 400 ft. above Tongue River. The thickest coal bed in the district is the Monarch, which is mined on a large scale by the Monarch Coal Mining Co. at the town of Monarch, about 10 mi. northwest from the city of Sheridan.

The Carney coal bed is exposed at only a few places, and these are in and north of the Tongue River Valley. This seam is being mined on the north side of Tongue River by the Carney Coal Co. The coal is hauled on a slight descending grade to the portal and thence on an incline to the tipple.

The Dietz coal beds are in the Goose Creek Valley south of Tongue River. Of the three workable beds of the Dietz, Nos. 2 and 3 have received the most attention by the coal company. This coal is also mined locally to supply the ranchmen.

The Chicago, Burlington & Quincy R.R. passes northwesterly through the center of the district, furnishing the mines with shipping facilities. The railroad company itself is by far the most important single customer for Sheridan coal and has been using it exclusively for engine fuel on the Sheridan division between Alliance, Neb., and Billings, Mont.

The present market is confined to Nebraska, the Black Hills of South Dakota, Montana, North Dakota, and as far west as Idaho and Washington.

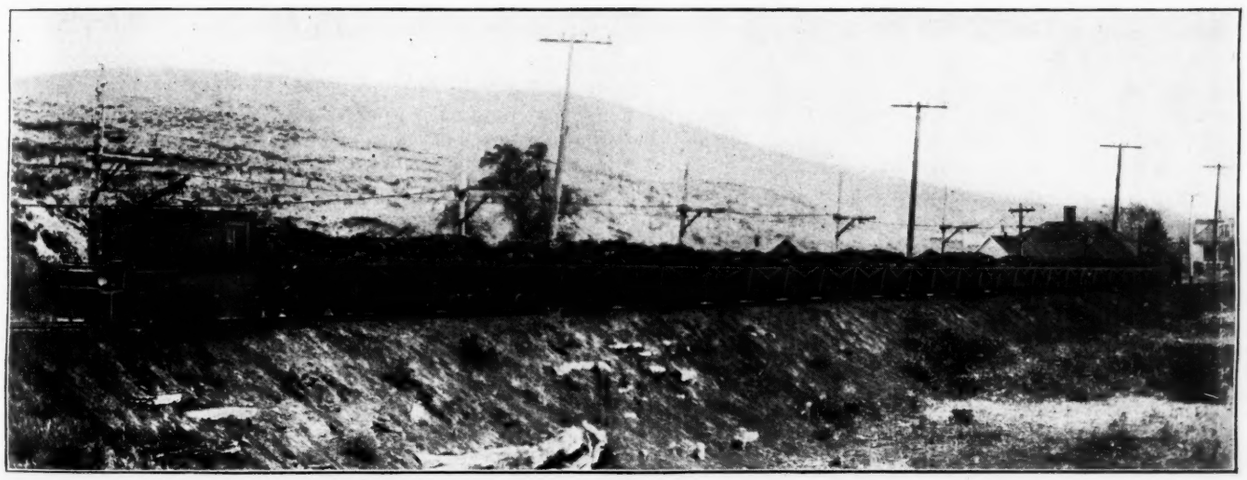
Power for the operation of the different mines in the district is furnished by the Sheridan County Electric Light and Power Co. The mines at first generated their own energy for operating the haulage motors and mining machines, but reports and estimates of engineers as to the cost of generating power showed an economy in mine operation in favor of a central station and purchased power. In order to be able to serve the mines and other commercial enterprises in Sheridan, the power company erected a 2,500-kw. generating station at the Acme Coal Co.'s property.

At the power company's plant, three-phase 60-cycle 2,300-volt current is generated. This is stepped up and transmitted over a pole transmission line to the different mines and delivered at 3,300 volts. The current used for each property passes through 600-kv.-a. oil-cooled transformers, stepping the voltage down to 2,300. Direct current is used for the haulage motors and mining machines. This is furnished by synchronous motor-generator sets that are wound for 250 volts. The generators are driven by direct-connected synchronous motors wound for 2,300 volts.

The cost of power to the consumer is reasonable, the power company charging a flat rate of 1c. per kw.-hr. for all current consumed, plus $1 per hp. per month for a maximum demand or ready-to-serve charge. The maximum demand varies at each property from 300 to 600 hp. per month. The use of central-station power is not only economical, but makes for higher efficiency. The central-station employees are experts in their line, thus assuring reliable operation and a guarantee of continuous service.

The Panel System Is Universal

The panel system of mining is employed throughout the entire field. The main drift and slope entries are driven double and triple. The side panel entries are mostly double and driven 12 ft. wide on 45-ft. centers, leaving 33 ft. of pillar between entries. The rooms are usually driven 22 ft. wide and 250 ft. long, leaving an 18-ft. pillar between rooms. The entries are well protected with barrier pillars that insure against the possibility of a squeeze or creep.



A 15-TON LOCOMOTIVE PULLING 30 CARS OF MONARCH COAL

The practice in mining the coal in the thick Monarch seam is to mine out 10 to 12 ft. when advancing in the first operation. After the panel entries and rooms are driven up the required distance, a start is made at the coal face of each and the pillars and remaining top coal that is considered merchantable are drawn completely as far back as the barrier pillar that is left to protect the main haulage entries.

Throughout the district the custom prevails of leaving a portion of the coal as roof. This is designated as top coal, and varies greatly in thickness, ranging from 10 to 12 ft. in the Monarch seam and from 6 to 7 ft. in the Carney and Dietz seams. The top coal makes an excellent roof and requires no timbering. The roof immediately above the coal is composed of a frail, black slate that could not be supported without leaving the top coal.

The largest producing mine of the district is the Monarch, owned and operated by the Monarch Coal Mining Co. The mine is opened by drift in the Monarch seam, which is 34 ft. thick. This seam is the thickest bituminous coal bed mined in this country. The company at the present

time is opening a new mine in the Monarch seam on the east side of its property and will soon take out coal.

The coal measures dip to the southwest approximately 2 per cent. The main drift is opened in the bluffs on the south side of Tongue River. The panel system of mining is employed throughout. The coal is transported from the different partings to the tipple by Jeffrey electric locomotives, and all the coal is undercut with Goodman chain breast mining machines. Owing to the thickness of the bed each machine can undercut 500 tons daily.

Monarch coal is prepared by the latest improved shaker screens, which are housed in a modern steel tipple. The coal is all loaded by Mineera box-car loaders, thus insuring the minimum amount of breakage.

The town of Monarch is one of the handsomest mining towns in the West. It is well laid out along the west bank of the Tongue River. The houses are all substantially built, with attractive gardens and clean streets. The present population is about 1,000.

The Carney Coal Co. is one of the largest operators in the field and opened up the Carney seam in 1904, on the north bank of Tongue River. Modern equipment for mining, haulage and loading has been installed on the south side of the river. The mining town of Carney is well laid out and has a population of 800.

The Kooi Coal Co. was established in 1907. A slope mine was opened in the Monarch seam southward from the outcrop. The mine is equipped with electric haulage and mining machines, one of the chief features being a large 20-ton Goodman locomotive that is used to transport the coal from the inside of the mine to the tipple. The town of Kooi is well located and attractive, and has a population of 500.

Mines Located Between Kooi and Sheridan

The New Acme Coal Co. was established in 1911. A drift mine was opened on the north side of Tongue River. A modern steel tipple has been installed, also machinery for haulage and mining purposes. The underground workings are operated on the panel system.

The town of New Acme is well laid out, with modern dwellings and attractive gardens. The streets are clean and make a pleasing sight on entering the village. The population is approximately 500.

The mine of the Sheridan Coal Co. is located at Dietz, the oldest mining community in the district. This company commenced to operate in 1897 and is mining what is known as the Dietz Nos. 2 and 3 seams, which measure from 10 to 14 ft. in thickness. The present operations are confined to these two beds. The mine is a slope extending 350 ft. at an angle of 20 deg. From the foot of this slope the mine workings extend on practically a level plain. The mine is equipped with electrical haulage and mining machines.

In the early days the town of Dietz was a large camp and had a population of over 1,200, but at the present time the population has decreased to approximately 500.

The Model Coal Co. operates the only mine in the district that is opened by a shaft. The hoisting shaft was sunk in 1912, but up to the present time no attempt has been made to sink either an air or an escape shaft. Under these conditions the law prohibits the working of more than 20 men. This reduces the daily output to approximately 175 tons per day. The company controls only a small acreage.

The companies in the field have all aided in raising school standards, the teachers having been very successful in teaching English to the children of foreign miners. There are a number of lodges and local organizations at each camp. Among these are baseball teams, brass bands and tennis clubs. Other amusements that are provided are moving pictures, pool and reading rooms.

Sheridan is the largest city in Wyoming and is located on the northeast corner of the district near the Big Horn Mountains. It commands the wholesale and general trade for a radius of 100 mi. The present population is about 13,000. The city is well laid out, has several large stores and six National and state banks with deposits of over three million dollars. It has excellent schools and churches, many miles of street improvements, and an electric street railway which serves all sections of the city. In addition this affords convenient transportation to the United States military post at Fort McKenzie, and also to the mining camps of Dietz, New Acme, Carney and Monarch.

Miners' Bronchitis in England

Dr. J. S. Haldane, who is director of the research laboratory instituted by the Yorkshire (England) coal owners at Doncaster, stated at a meeting of the Institution of Mining Engineers that the death rate from phthisis among coal-mine workers was not only much lower than in nearly all other occupations, but was even lower than in the exceptionally healthy occupation of farm laborer, despite the fact that the latter breathed pure air, was more isolated from other persons and therefore less exposed to the risks of contagion.

The low death rate from lung diseases among colliers up to the age of 55 is almost entirely due to their relative immunity from phthisis. This immunity existed in 1850 just as now. Above the age of 55 the colliers' increased death rate from bronchitis in old age begins to tell heavily, and their general death rate probably goes up correspondingly.

Coal dust certainly does not kill germs, nevertheless the medical man has come to regard it as a preventive of phthisis. There are in the lungs what are known as "housemaid" cells, because they remove "foreign bodies" such as tubercle bacilli. Just as the housemaid keeps a dwelling clean so these cells continually operate to rid the lungs of the foreign bodies that enter with the air breathed. Now these cells are probably stimulated to action by the presence of coal dust, and in ridding the lungs of the harmless dust they also remove bacilli that are not so harmless.

So coal dust, while dangerous in explosions, may in moderation be a source of safety to colliers. Town dwellers and smokers may also take comfort to themselves with the thought that in introducing smoke particles into their lungs they are educating the lung epithelium to deal with the really harmful "foreign bodies."

Whatever may be the cause of the excessive bronchitis among old colliers, the evidence does not now bear out the theory that it arises from excessive dust inhalation. Nor is there any evidence to show that the excessive bronchitis of old coal-mine workers is due to exposure to changes of temperature. Miners do not appear to take harm in this way, and in other occupations associated with exposure there is no excess of bronchitis among young or old.

Explosion at Bessie Mine

By H. S. Geismer*

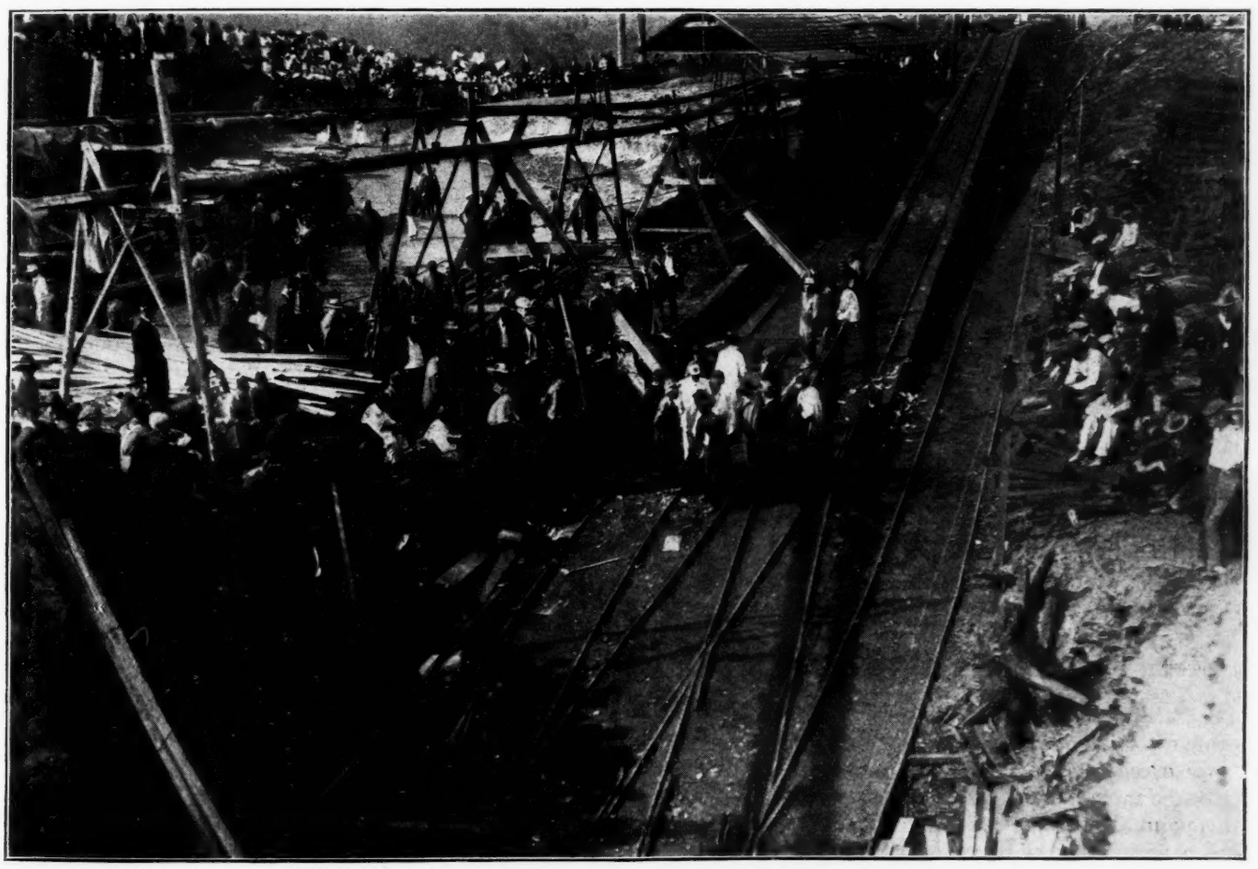
SYNOPSIS—Thirty men are believed to have been killed in an explosion of the mine of the Sloss-Sheffield Steel and Iron Co. near Birmingham, Ala., six of them dying from physical violence and the rest from afterdamp. Apparently the sprinklers served to prevent the spread of the explosion and thus mitigated its violence.

An explosion occurred at the Bessie mine of the Sloss-Sheffield Steel and Iron Co., near Birmingham, Ala., Saturday morning, Nov. 4, 1916, at 2:45 a.m. In this disaster probably 30 men lost their lives.

Up to 1 p.m. on Monday, Nov. 6, 28 bodies had been recovered, but that night the long-sought dead bodies of John Giles and Sam Taylor were found on the slope air course near the fifth heading. At the time of the explosion 38 were at work in the mine, and only eight escaped with their lives. Of the dead, six apparently were killed by the force of the explosion while the others lost their lives because of afterdamp.

News of the explosion traveled quickly, and by 8 a.m. Saturday morning the four helmet crews of the Republic Iron and Steel Co., five helmet crews of the Tennessee Coal, Iron and Railroad Co. and one of the Woodward Iron Co., from Mulga, Ala., were at work on the ground. Before the arrival of these men the bodies of two men had been recovered on the main slope a little above the fourth right heading. They were horribly mutilated, showing that the men had met instant death from the force of the explosion.

The helmetmen went to work immediately and by 6 a.m. Sunday morning had penetrated down to the fourteenth right entry, recovering 14 bodies as they went. It was found that the air just ahead of the helmetmen was practically an explosive mixture, and it was decided to abandon work with the helmet crews until the ventilation could be brought down to the fourteenth right entry. Of the 16 bodies recovered up to that time all but seven had been found close to the main slope, and all had traveled some distance from their working places. Seven men had been at work in the eleventh left on a slope that is being driven through a fault. Some of these men met death from the force of the explosion.



TRACK LEADING FROM TIPPLE DOWN INTO THE BESSIE MINE

Sunday night the helmet crews again resumed their search for bodies in the advanced workings and by noon of Monday 12 more bodies had been recovered. All these were found close to the main slope, several of them being in the air course by which that slope is paralleled. At one point on the main slope near the eighteenth left the bodies of two men who had been at work on the heading were found, and lying on top of them was the body of a

*Consulting engineer, Keiser-Geismer Engineering Co., Birmingham, Ala.

third man who had evidently stumbled over their dead bodies and then expired.

The rescue crews were probably handled with more efficiency following this explosion than at any other that has occurred in the state. They worked in crews of five and kept in touch with each other by means of a life line 1,000 ft. long. At all times five to twelve men were kept in reserve to replace anyone who might be overcome, but not once during the work was it found necessary to send back a signal of distress. Assisting the regular helmet crews mentioned above were a number of men who had received rescue training and are now in the employ of companies without such apparatus. These men, being on mining machines in headings, with the exception of the two firebosses and a few of the day workers, John Drake, one of the firebosses, was in No. 4 room on the eighth right heading when the explosion occurred and was able to walk out of the mine following the explosion. In passing the seventh right he met four other men who had been in that heading, but whose lights had been extinguished by the blast. They all managed to reach daylight through an abandoned slant about a quarter of a mile to the right of the present main slope.

John Shell, the other fireboss, was in the ninth left when the explosion occurred, and he with two other men walked across the main slope into the right air course.

AN UNSUCCESSFUL ATTEMPT WAS MADE TO REVIVE ONE OF THE MEN CAUGHT IN THE EXPLOSION

cause of their knowledge of mine-rescue apparatus, proved to be exceedingly helpful.

Bessie mine is on the Mary Lee seam, which pitches at this point about 8 per cent. and is 11 ft. thick. The mine has a main slope with an airway on either side. This main slope is a little over a mile in length, and there are 19 right and 18 left headings driven from it. The longest entries on the right are about three-quarters of a mile in length and on the left about one-half mile.

The force of the explosion destroyed the brattices in nearly all the cross-entries for a distance of about 600 ft. from the main slope. In the eleventh left heading practically all the brattices were blown down.

The company employs two firebosses on each shift, and the nightshift firebosses at work in the mine at the time of the explosion both came out alive. They were working their way down the main slope marking up the headings for the day crew which was to follow, when the explosion occurred. All the men in the mine were working on mining machines in headings, with the exception of the two firebosses and a few of the day workers. They remained near a leaky air line until they were rescued by the helmetmen nearly 15 hr. later.

The explosion did little damage to the inside of the mine and did not injure either of the two mine fans. It only blew away the explosion doors. Canvas was almost immediately used to replace these, and the mine fans were kept running continuously.

The list of the men whose bodies have been recovered is as follows:

White—Client Hubbard, married, four children; Otis Glover, married, two children; Raymond Raney, single; Dave Bray, married, three children; Fred Sharpe, pumper, single; Lonnie Gray, single; Martin Jones, single; Glenn Woods, pumper, married, one child.

Colored—Dave Wilburn, Toilet Fearson, Will Caldwell, John Dumas, George Brown, Amos James, Will Latimer, John Robinson, Joe Robinson, John Giles, Sam Taylor, Will Dobbins, Will Stallings, Monroe Clark, Leroy Pearson, Paul Robinson, Tom Elias, Dura Davis, Charles Brown, Will Moore.

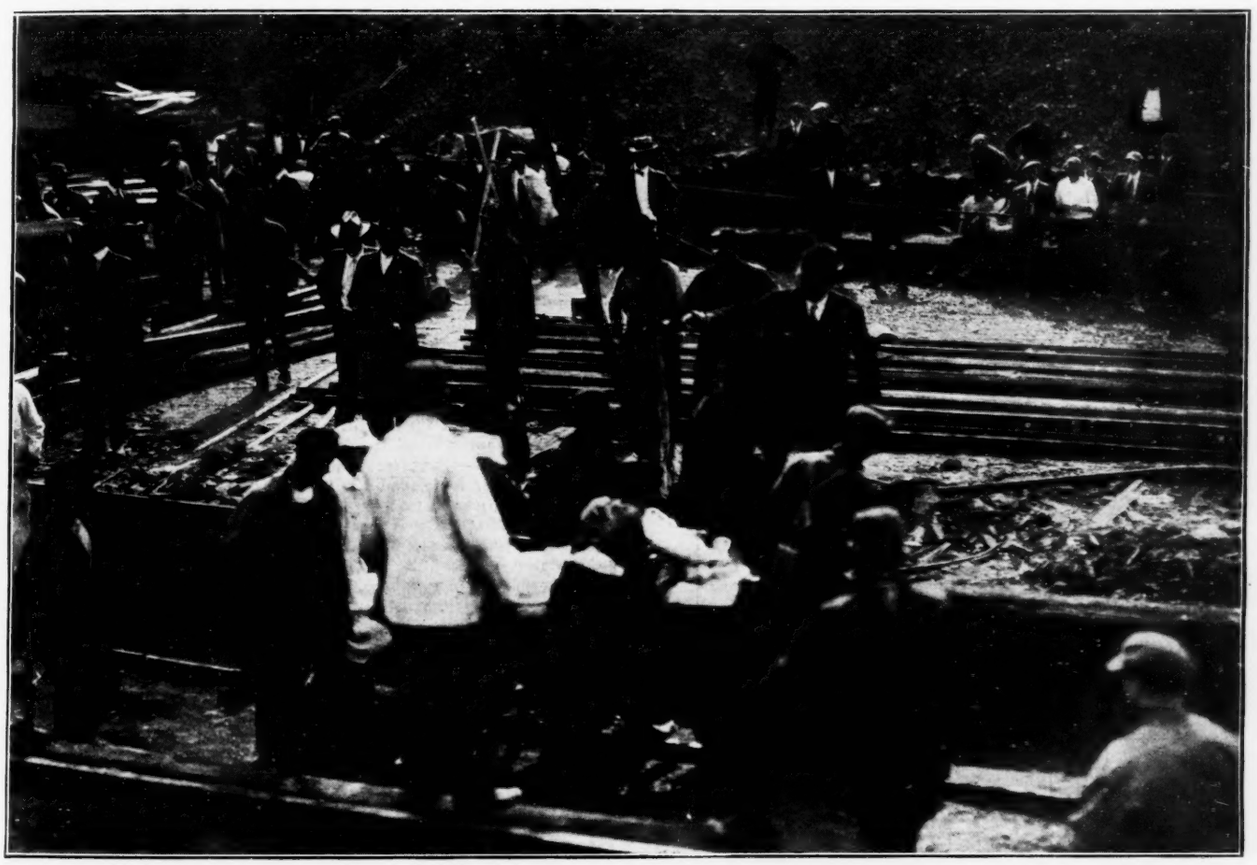
News of the explosion was immediately telephoned to Birmingham, and all the officials of the Sloss-Sheffield

Steel and Iron Co., as well as those of other large operating companies of the district, rushed to the scene in automobiles.

In consultation with J. C. Maben, Jr., vice-president and general manager of the Sloss-Sheffield Steel and Iron Co., and Jones Moore, general superintendent of mines of the company, were John Meagher, general superintendent of coal mines of the Tennessee Coal, Iron and Railroad Co., Frank Morris, general superintendent of coal mines for the Republic Iron and Steel Co., C. H. Nesbitt, chief mine inspector of the State of Alabama, and E. B. Sutton, in charge of the Birmingham Rescue Station of the United States Bureau of Mines. Earl Butler, chief engineer of the Republic Iron and Steel Co., had charge of the helmetmen of his company, and J. W. Groves conducted the work of those of the Tennessee Coal, Iron and Railroad Co.

Dr. Routledge, of the United States Bureau of Mines at Pittsburgh, arrived in Birmingham Monday morning and immediately went to the scene of the explosion. The officials of the Sloss-Sheffield Steel and Iron Co. extended every courtesy to all newspaper men and gave out all information to the press as soon as they received it.

Bessie mine has a modern sprinkling system designed to eliminate the possibility of a dust explosion. A system of inspection to guard against gas explosions has always been in force. Gas is often encountered in the mine, but the men work with open lights. An assistant state mine inspector had made an examination of the mine just a week before the explosion. Such inspections are made once every 90 days.



RESCUEMEN BRINGING ONE OF THE UNFORTUNATE VICTIMS OF THE EXPLOSION TO THE SURFACE

Rate and Inspection Books for Mine Foremen

By H. D. Easton*

Coal Age has provided a means of presenting ideas of practical value to individuals and companies engaged in mining, preparing and marketing coal. Many excellent mechanical devices have been illustrated, and a great number of "kinks" and short cuts have been presented in the pages of the magazine. Numerous record books and coal-office efficiency plans are in use, some of which are of high merit and should prove of widespread value if presented to *Coal Age* readers. It is with a view of encouraging other contributions along this line that two record books will now be described.

Both these books are copied from those used by the Stonega Coke and Coal Co., and I wish to give that company full credit, as I claim nothing new. Only minor changes, to meet local requirements, have been made. As these books have proved useful to some, they may meet the needs of others.

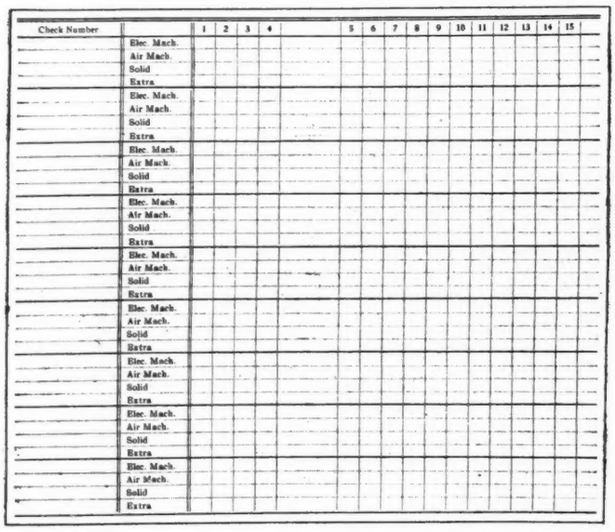
The mine rate book is bound in a cardboard cover and opens in the usual manner. It is 4x7 in. and has 32 leaves which are divided as shown in Fig. 1.

Each mine foreman takes his book to the payroll clerk every evening after the day's run is over. The clerk then has the correct rate before him to go with the tonnage which he takes from the weighman's bulletin. Enough

*General superintendent, Federal Coal Co., Straight Creek, Ky.

space is allowed under "Check Number" to note the working place if so desired. In case no air machines are in use, this line could be omitted in each division. The "Extra" space is used for slate, water or other difficulties encountered where a certain extra rate per ton is allowed the miner.

The mine foreman's inspection book has perforated sheets which are torn out and filed in the superintendent's



Check Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Elec. Mach.															
	Air Mach.															
	Solid															
	Extra															
	Elec. Mach.															
	Air Mach.															
	Solid															
	Extra															
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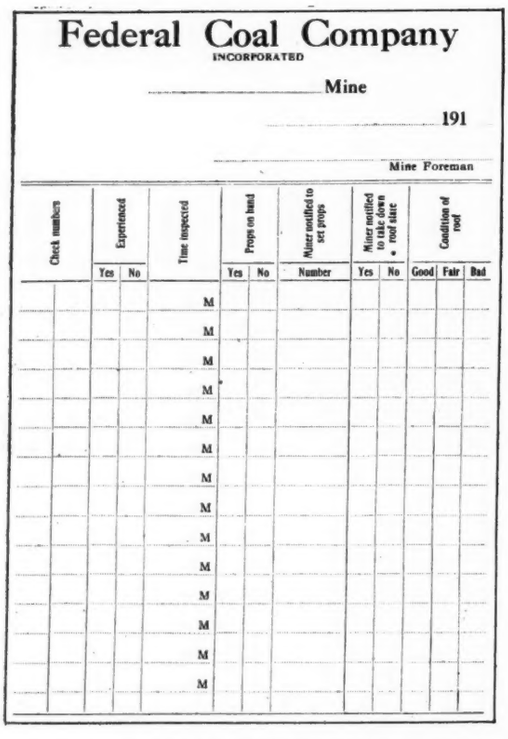
	Extra															

FIG. 1. LEAF FROM THE RATE BOOK



Federal Coal Company
INCORPORATED

_____ Mine

_____ 191

_____ Mine Foreman

Check numbers		Experienced		Time inspected	Props on hand		Miner notified to set props	Miner notified to take down roof slate		Condition of roof		
		Yes	No		Yes	No	Number	Yes	No	Good	Fair	Bad
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								
				M								

FIG. 2. PAGE FROM MINE FOREMAN'S INSPECTION BOOK

office each day. Carbon paper is used, and a copy of each daily report is kept in the book. The book itself is filed when full, so as to be certain that a complete record is kept in case any of the torn-out sheets should be lost. The book is 4¾x8½ in., is bound in heavy cardboard and opens endwise. Fig. 2 shows a sample page.

Two spaces are provided for "Check Numbers," since two men may be working in one place, each running his own number. The "Time Inspected" column gives a check on where the foreman is each hour of the day. This column is used to denote the working place. A separate column might well be provided to show where each man works.

The inside cover of the inspection book carries printed instructions for the mine foreman, as follows:

NOTICE

1. It is the first duty of each mine foreman to see that all men in his employ are working under safe conditions.

2. All mine foremen will be held strictly responsible for any accidents which may occur in their mine.

3. The form contained in this book must be filled out each day during the mine foreman's regular rounds, and the condition of each working place must be noted while mine foreman is in said working place, and must not be filled out from memory, after mine foreman returns to his office, or is in some other part of the mine.

4. In case the mine foreman notifies miner to set props, or cross-timbers, or take down roof slate, he must mark the location of such props or cross-timbers or slate to be taken down, on the roof with chalk. In case of his failure to indicate props or cross-timbers or loose slate in this manner, and an accident results, it will be considered that he did not notify miner of the condition of his roof.

5. In case mine foreman discovers roof conditions in any working place which he considers immediately dangerous, it shall be his duty to see that this roof is taken down or timbered, or in the process of being timbered, or taken down, before he leaves such working place. In case mine foreman instructs miner to take down slate, or timber roof, and upon his next visit miner has not taken down or timbered this roof, it shall be the duty of the mine foreman to see that this working place is immediately timbered or slate taken down, and the miner penalized, either by fine or lay off, for not complying with instructions. Any circumstance of this kind should be written up in full on the back of this report.

6. Each column of this report must be filled out for each working place—that is, "Check Number," "Time Inspected." If miner is experienced an "x" must be put under the word "Yes." If miner is not experienced, an "x" must be put under the word "No." The same form of check to apply to "Props on Hand," "Miner Notified To Take Down Roof Slate" and "Condition of Roof." If miner is notified to set props, the number of props must be given. In case miner is notified to set cross-timbers, it should be indicated by the number, followed by a cross. If miner is not notified to set props or cross-timbers, this column may be left blank.

7. This form shall be torn from the book each night and handed in at the pay-roll office with the time book.

All the instructions given above must be closely and conscientiously followed by the mine foremen.

A Good Safety Record in West Virginia—A correspondent writes that at the Modoc and Wenonah mines of the Turkey Gap Coal and Coke Co., Dott, Mercer County, W. Va., there has been but one life lost in eleven years. The man killed was a motorman. The mine force has increased till it now employs about 100 miners. Its tonnage is about 25,000 tons per month. All this coal is shortwall mined, including the pillar work. D. H. Frazier, the superintendent, says that little attention is given to safety-first work, but that the success in avoiding fatalities is due to ideal conditions inside and his able foremen, R. O. Mahoney and J. L. Perdue.

To Determine with Utmost Accuracy the Ash Content and heating value of a quantity of delivered coal would require the burning of the entire quantity, and special apparatus arranged to measure the total heat liberated, or would require crushing the whole quantity, and reducing it by an elaborate scheme of successive crushings, mixings and fractional selections to portions weighing approximately 1 gram, the minute quantity which the chemist requires for each determination. Either of these procedures is obviously impracticable if the coal is to be used for the production of heat and power. The method actually employed is to select portions from all parts of a consignment or delivery of coal and to systematically reduce the gross sample, obtained by mixing these portions, to quantities that the chemist requires for making ash determinations or that can be burned conveniently in the calorimeter, an apparatus for determining the heating value.

The Co-operations of Peace vs. the Competitions of War*

By Carl Scholz†

SYNOPSIS—The author urges that without co-operation between mining units and between labor and capital it is impossible for that industry to do its duty to the public, for the energy which should be expended in development and research will be wasted in competition and senseless strife. He urges that the European conflict ended, a strenuous industrial war will immediately ensue. For this we need to prepare by immediate coöperation, despite the fact that just at present we do not experience the disastrous effect of our competitive conditions.

The radical changes that have recently taken place in the nation's industrial affairs cause us to halt and wonder. Even the most casual observer will agree that unless we exercise the utmost care we cannot continue to progress in a manner which will befit this nation so well endowed by Nature and protected by Providence.

The violent flucutations in our industrial affairs emphasize the need of a controlling power such as is at present not fully established in this country, and there is a call for the development of a new force the nature of which is not yet fully known and that where known is generally misunderstood—Coöperation.

Less than two years ago the mining industry in general was at its lowest ebb—many mines were closed down in the metalliferous districts. Only the higher-grade properties with strong financial backing were producing, many of them at a loss. There was continued and commendable effort to obtain better returns, more by improvements in milling and smelting, than by tackling the main economic question. But lack of funds too often hampered the mine operator. Indeed, he was a courageous man who would put up his good money with the limited chances for returns.

Just like a bolt out of a clear sky, the European War came upon us, and for a moment business was completely paralyzed; but as quickly as shipping was restored, the products of our factories and mills needful for warfare came into demand, and we began to enjoy a prosperity which started somewhat slowly at first but gradually has spread over the entire country. Wages in the munition factories mounted, and other industries in the same locality had to keep pace or lose their employees. Furnaces and mills long idle were started and mines were reopened.

The coal-mining industry recovered last, there being a large surplus of capacity, but the last month has seen a change in the situation, which is a complete surprise to those who have been struggling under an ever-increasing load with no relief in sight. Our foodstuffs have advanced in price, and our farms have become profitable. The ingenuity and skill of our manufacturers organized forces and built plants quickly for the production of the commodities so badly wanted by the warring nations. Our bankers made possible the sale of these products by clever manipulation of credits.

This country was placed in an enviable position, not through any efforts of its own people, but because of the misfortune of many others. It is a grave question where we would be today if this war had not occurred, and we must ask ourselves, What will we do when it ends? The ideas of the political parties are so similar that we can no longer deceive ourselves by hoping that party changes will aid us in securing the assistance we need.

The old cry that foreign countries need our foodstuffs, and that we can always find a ready and willing market for our agricultural products abroad, is no longer true. Though its men are in the trenches Germany, even without food from us, has been able to subsist—no doubt with privations. But we cannot expect that after the war we shall be able to sell Germany as much as we could before the war occurred, nor shall we receive from her the same prices; for that country has learned how to exist without imports. As the result of the cost of the war Germany will not have much money to expend in purchases from foreign countries. Furthermore, this will be true also as regard other nations. We, in the meantime, have become a manufacturing nation and must have markets for our factory output and our farm products.

The American Mining Congress was urged to hold this meeting in Chicago because of the central location of that city. If our attendance is small, it is due to pressure of business preventing our members from leaving their work. We can only regret their absence because the need for work to secure a better economic condition has not ceased, although present conditions abroad have temporarily relieved the situation which obtained before the war.

Our Customers Will Soon Be Competitors

Those who are now our best customers will sooner or later become our competitors, well seasoned by war experience, with an efficiency born of hardship, with an economy instructed by poverty, and with an endurance and courage unheard of before in the annals of the world's history. We may well quote the text of a most excellent sermon recently delivered by that great orator Bishop Du Moulin, in which he described the effects of the war on the spiritual side. It is necessary to say to our industries as also to our spirits, "Ye must be born again."

When Robert Owen began his efforts to establish the first coöperative settlement, he was regarded as eccentric; but the success of the New Lanark Colony is too well known for us to think so now. Other coöperative colonies have suffered failure for reasons easily understood, and it has been clearly established that men cannot coöperate successfully if the sole tie is selfish gain. The line between coöperation and monopoly must be maintained, just as socialism cannot be merged with democracy.

This foreword may seem uncalled for on an occasion of this kind, but to one who for three years as the head of

*Presidential address entitled "Coöperation, the Basis of Safety, Efficiency and Conservation, in the Use of National Mineral Resources," delivered at the banquet of the National Mining Congress held at the Hotel La Salle, Chicago, Ill., Nov. 16, 1916.

†President, American Mining Congress, and president, Rock Island Coal Mining Co., 139 West Van Buren St., Chicago, Ill.

this congress has made many calls to which there was no response, it seems to be entirely pertinent. While some progress has been made, much has been left undone, and more active coöperation will be required among the mining men of the country. It might be well at this time to review briefly the purposes of the congress.

Safety Is Paramount

Safety is and always should be the first aim. Closer coöperation between the Government, employer and worker must be secured if this aim is to be accomplished. In time of greatest activity, safety is regarded less seriously than during slack times. The miner may say, "I'll load another car before I set the prop as instructed," but it may never be set by him because the rock which he should have supported may bury him before he makes it secure.

The foreman may conclude time is too valuable for him to stop and change a rope. He decides to wait until Sunday, but on Saturday the cage falls to the bottom and several working days are lost instead of those few hours which would have been consumed in making the needed repairs. It is our aim to aid in the elimination of such accidents. So also are we interested in the losses resulting from the disputes between capital and labor. The workers may have a slight difference with the employers on wages or employment conditions. The discussion which should be conducted without passion becomes heated. Past differences, which would have been forgotten, are revived and hatred develops between parties that should be loyal to each other. The workers do not realize that the success of their employer is needful if they are to be assured of a full dinner pail and the other comforts of life. The employer forgets that a satisfied employee is an asset and that his business success is measured by the number of men he can employ. Each side fights relentlesly against its own interest, not knowing where that interest really lies. Each blindly follows a route laid out by leaders who have selfish aims in mind and who do not work for the good of the majority. Coöperation in the true sense would avoid such needless and useless troubles. In the days of the guilds, it was the employers and workers of one industry combined against all other industries. Why not now mine operators and mine workers seeking for the advantage of the mining industry? Their success depends on the good fortunes of one another, and if they seek a common end, efficient operation will surely follow.

Other Aims of the Congress

But this is not all the American Mining Congress can do. It was active in the establishment of the Bureau of Mines, and it is interested in having this bureau maintain the high standard with which it started in its career. Much work, moreover, yet remains to be done if other much needed legislation is to be obtained. Our public-land question still needs solution; our mining laws require revision; our mining development is suffering for want of a proper stimulation through the protection of investors; the authority of the Federal Trade Commission needs expansion; the right of corporations to coöperate in useful endeavor calls for legislative affirmation, and the Alaskan mineral wealth awaits impatiently for laws under which it may be developed.

In the coal industry there is special need for coöperative work which must have the sanction of the Government instead of the distrust with which the efforts of the industry are now met. Coöperative selling methods are essential. Coöperative work alone can solve such problems as how to coke Western coals and convert them into smokeless fuels.

By coöperation only can we succeed in the manufacture of byproducts, such as dyestuffs and ammonia, and there are thousands of other products which discovered would develop industries that are now unknown to us. Instead of interfering with the mining industry or preventing its healthy development, the Government must aid in such a program. Nothing would do more to stabilize business than such an attitude. A constructive policy will influence the use of capital in such enterprises, and only abuse of power or monopolistic tendencies should be discouraged and prevented.

A mine owner acting alone can never get the best possible results. An interchange of opinions, an elimination of waste and an avoidance of duplication in selling expenses, such as can only be secured by coöperation, will benefit the country more than a competition in which each company or district does its little best acting on its own narrow initiative.

Labor Legislation Is Important

Labor and the legislation affecting it is uppermost in the minds of our people. The recent railway legislation has perhaps brought to our attention the need for some influence which will regulate these matters. The sympathy of the public is naturally with the laboring man. It is not best that this sympathetic feeling shall carry public sentiment too far, because capital can only pay labor out of its earnings. For years the American Mining Congress has discussed this important matter.

Unquestionably employers have often taken advantage of their men, but with the increasing strength of labor unions, it is the workers who have now taken advantage of the situation. There must be a middle ground on which we can stand and defend our actions, and it has been the good fortune of the congress during the last several years to solve some of the problems which could not be disposed of by those directly concerned in them. Just as wars destroy lives so strikes and lockouts are destructive to our resources. They are so absolutely out of place that provisions for heavy punishment to those responsible should be inflicted. While it may be proper for workers to obtain the best pay possible under existing conditions, once wage contracts are concluded the workers should aid employers in reaping the richest harvest possible. They should do this so that they may be justified in asking for further increases thereafter. At present the miners, having signed a contract, frequently seek to make operation under the agreement as unsatisfactory and unprofitable as they can. Leaders of both capital and labor should not seek their own glory, but the interests of their clients.

In the immediate future the members of the congress will be so much occupied in taking care of their business, that they will be apt to overlook the needs of the time coming when, if the proper precautions are not taken, there will be no business to tend. The old-adage runs, "In time of peace prepare for war." We need to write it, "In time of war prepare for peace," for the peace of Europe will bring upon us competitive conditions against which, with our lack of industrial harmony, we shall be ill-fitted to cope.

Flat Top Coal-Washing Plant

By J. G. Hanlin*

SYNOPSIS—This plant employs five primary jigs and one rewashing jig. The output of the mine is now 1,600 tons per day, but an anticipated increase would bring this to 2,000 tons. All the coal from this mine is made into coke. Washing reduces its ash content approximately 8 per cent.

The Sloss-Sheffield Steel and Iron Co., of Birmingham, Ala., has recently put into operation a new 200-ton-per-hour coal-washing plant at its Flat Top mine. Some changes in the original construction and machinery installations have been made, but it is the intention in this article to describe the operation of equipment as at present installed. The bins, tanks and retaining walls are of reinforced concrete, the jig building of steel, while the elevator and drag, supports and framing, are of wood-preserver-treated timber.

The mine at this place is a single slope opening, with a daily output of 1,600 tons and a contemplated daily output of 2,000 tons, per single shift. It has been regularly operated for 16 years. Since the coal is mined with convict labor, this requires a minimum of shutdowns and mechanical interference with steady operation. The output is used in the manufacture of blast-furnace coke, a low ash percentage being desired. Fifty per cent. of the output is coked in beehive ovens adjoining the mine, and the remainder shipped to similar plants at other locations.

A chemical laboratory is maintained and five times daily the washer operator is furnished with an ash analysis of the washed coal, enabling him to keep closely in touch with the results of his labor. The maintenance of chemical laboratories at all coal-washing plants of the company has been found to reduce materially the waste of coal in the refuse and the amount of ash content in the washed product.

The run-of-mine coal after crushing and before delivery to the washing plant contains an average of 18.55 per cent. ash. The combined washed and rewashed product has an average of 9.5 to 9.7 per cent. ash content, with a variable loss of coal in refuse of between 3 and 5 per cent. Previously to delivery to the washing plant the coal is crushed and passed through screens having 1½-in. perforations.

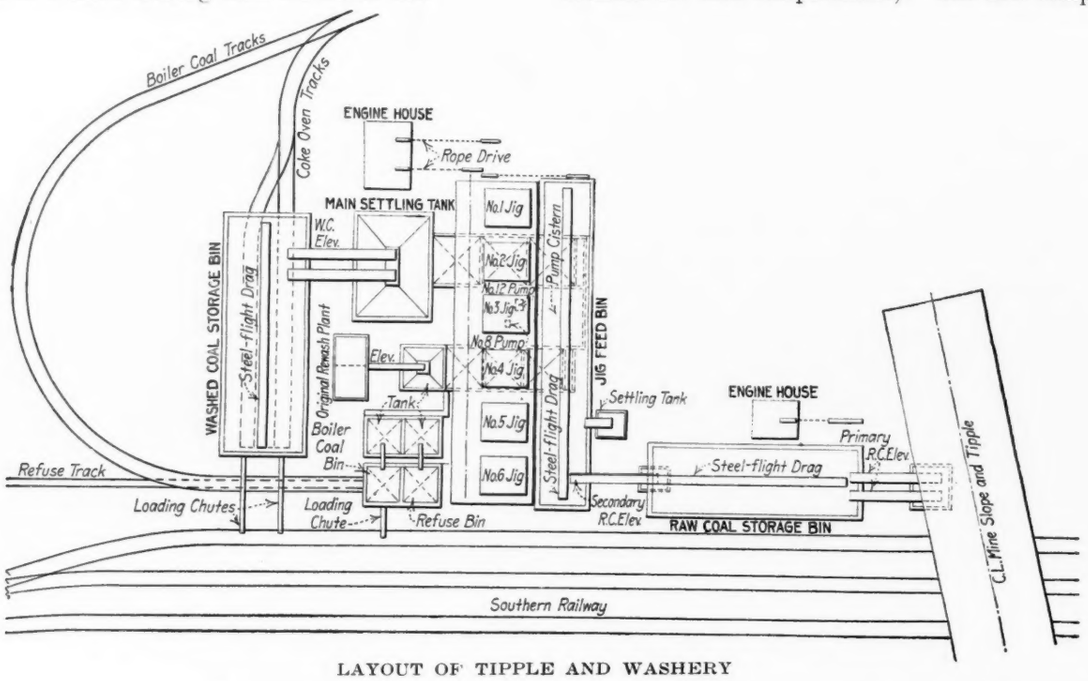
The plant in general consists of duplicate 200-ton-per-hour raw coal elevators discharging to a steel flight conveyor, over a 1,000-ton concrete storage bin; the coal is distributed in the bin, from which it is taken by a 28-in. belt conveyor, located underneath, and again elevated to a conveyor over the jig feed bin. Or else the steel flight conveyor carries the coal across the storage bin to a second steel flight conveyor extending over the jig feed bin, where it is distributed to the six hoppers of the feed bin, one hopper for each jig. The coal has a gravity flow from the bin hoppers to the jigs in metal troughs. Its movement is slightly accelerated by small streams of water.

GENERAL VIEW OF THE COAL-WASHING PLANT

The washed coal is sluiced directly to a large concrete settling tank. The refuse from the kettles of the first compartment is conducted to a smaller settling tank, and refuse from the second compartment together with the hutch product of both compartments is led to a settling tank located just back of the jig feed bin. From here it is reëlevated to one of the six main jigs, which is used only for rewashing. This jig has both compartments equipped with rotary refuse valves instead of slate kettles, and makes a close separation of coal and refuse. A specific gravity of 1.45 is used as a basis of separation at this plant. The rewashed coal is conveyed by a sluice to

*Construction engineer, Sloss-Sheffield Steel and Iron Co., Flat Top, Ala.

the settling tank for washed coal. The refuse from the first compartment goes to the final refuse settling tank, and the material from the hutches of both compartments together with the refuse from the second compartment, is collected in a third settling tank for boiler use.

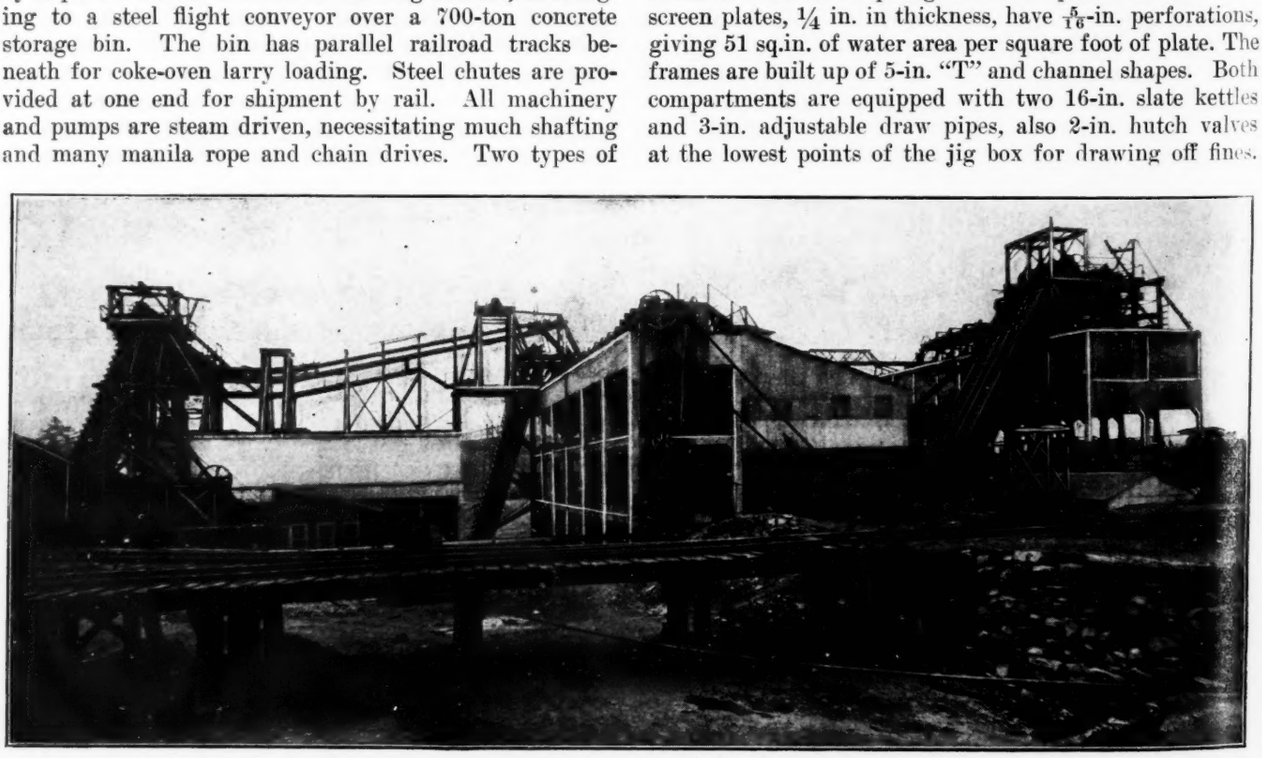


LAYOUT OF TIPPLE AND WASHERY

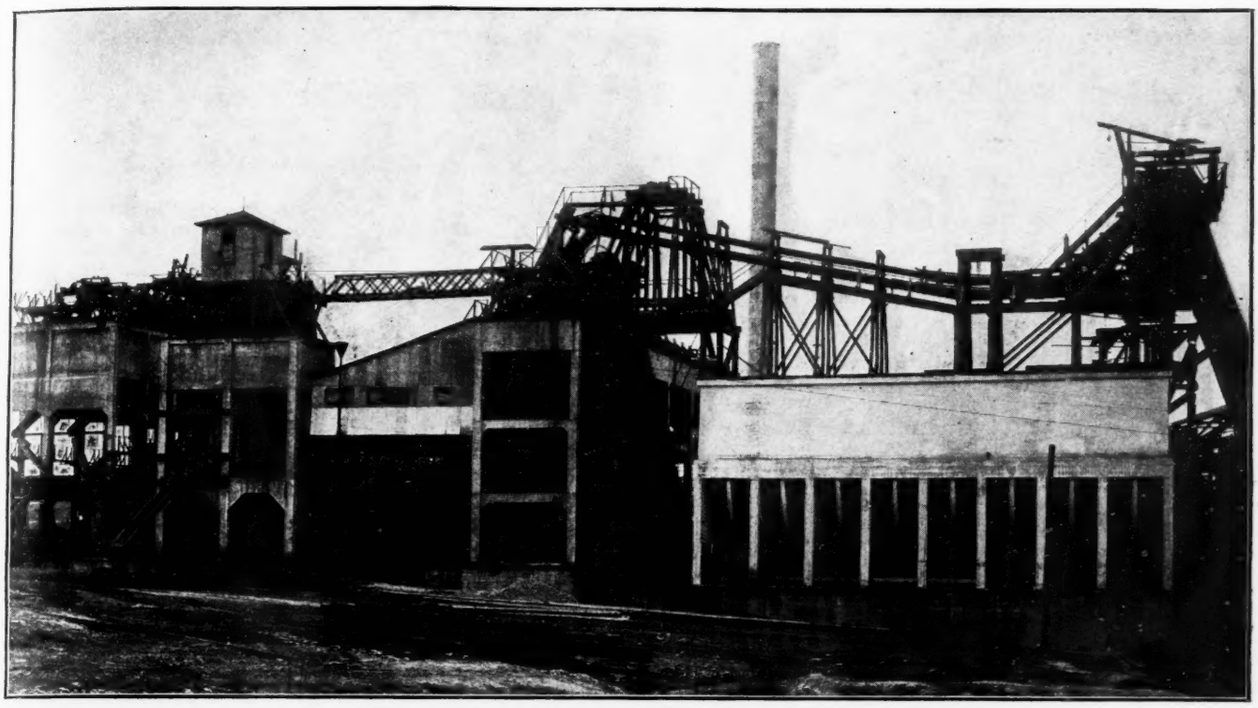
The rewashing plant originally installed consisted of two small feldspar rewashing jigs. This equipment was inadequate, and one of the main jigs was provided with a separate elevator feed and is used most satisfactorily for this work.

The washed coal is elevated from the settling tank by duplicate elevators with self-draining buckets, discharging to a steel flight conveyor over a 700-ton concrete storage bin. The bin has parallel railroad tracks beneath for coke-oven larry loading. Steel chutes are provided at one end for shipment by rail. All machinery and pumps are steam driven, necessitating much shafting and many manila rope and chain drives. Two types of chain are used, a light and heavy malleable chain and a heavy bushed steel roller chain.

The six main jigs are of the double-compartment type, 6 ft. 4 in. long and 6 ft. 2 in. wide (overall screen measurement for each compartment). The first compartment has a depth of 15 in., the second only 12 in. They are built up of ¾-in. and 1-in. cast-iron plates and also have cast-iron overflow plates. Each compartment has two plungers, one on either side of the screen casing. These make 95 strokes 1¼ in. long per minute each. The plungers have eight 4-in. pressure valves, allowing the excess water to return beneath the plungers on the upward stroke. The screen plates, ¼ in. in thickness, have $\frac{5}{16}$-in. perforations, giving 51 sq.in. of water area per square foot of plate. The frames are built up of 5-in. "T" and channel shapes. Both compartments are equipped with two 16-in. slate kettles and 3-in. adjustable draw pipes, also 2-in. hutch valves at the lowest points of the jig box for drawing off fines.



SIDE VIEW OF THE WASHERY AND BINS



NEAR VIEW, SHOWING SOME OF THE CONCRETE CONSTRUCTION

Shafting and eccentrics are placed beneath the jigroom floor level, four eccentrics being employed to each compartment. This arrangement allows ample space for closely watching the jig action, and for repairs.

A No. 12 centrifugal pump supplies the jigs with water through a 16-in. pipe extending the length of the jigroom and located 7 ft. above the jig-screen level. From this pipe a 4-in. supply line to both plunger boxes of the first compartment is provided and a 2½-in. pipe leads to both plunger boxes of the second compartment. The water is introduced into the plunger boxes below the lowest point of travel of the plunger.

The water from the settling tanks passes through a series of concrete tanks on its return to the cistern of the circulating pump. These intermediate tanks are six in number. The fines that are precipitated from the water are drawn off and pumped into the main settling tank with the washed coal by a No. 8 centrifugal pump.

As previously stated, one of the main jigs is now used as a rewash jig. This is equipped with rotary refuse valves extending across the entire width of the screen surface. The plates have ⅛-in. perforations, with approximately the same water area as those with $\frac{5}{16}$-in. perforations.

The duplicate primary and secondary raw-coal elevators are similar in construction, having heavy timber framing and interchangeable machinery. They have a capacity of 200 tons per hour at a speed of 80 ft. per min. They are of the continuous bucket type, with bushed roller, steel link chain. These elevators are incased on the back with steel plates, insuring the return to the foot pit of all spilled coal.

The three steel flight conveyors over the coal bins are equipped with bushed roller, steel link chains, the different parts being interchangeable. They are driven at a speed of 50 ft. per min. The 28-in. belt conveyor has S. A. ball-bearing carriers and return rollers. All sluiceways are of wood construction lined with steel plates. The middle-product, boiler-coal and refuse elevators are similar in construction, having interchangeable machinery, perforated buckets and steel link chains. All elevator head gears and pinions throughout the plant are of cast steel, while the head sprockets are of semi-cast steel. The plant was under construction for a period extending over three years, much of the delay being occasioned by difficulties in obtaining suitable foundations and delayed material deliveries.

Put It Into Your Work

By J. R. Allardyce

Written expressly for "Coal Age"

Put character into your work,
Even in the depths of the mines;
And out of the effort will come,
By a purpose and process divine,
The will to do better, the power
To achieve in a loftier line.

Put character into your work,
In trifles that make for the pace,
Into the pick and the sledge,
Or the drill driving home in the face—
It's the small things that call for the man,
The big things belong to the race.

Put character into your work—
You owe it to self and to duty,
In the task for the hand that is gloved,
Or the fist that is horny and sooty;
Reactive a soul will result
That the gods will acclaim for its beauty.

Put character into your work
With patience, with pleasure and zest;
Approval, though tardy, will come
Through stretches of well-earned rest;
And a man that is strong to his part
Will emerge from the flame of the test.

The Labor Situation

General Labor Review

In the anthracite region the principal event to be recorded is the return to work of the miners at the Lackawanna colliery of the Temple Coal Co., Olyphant, Penn. The men had been on strike for some weeks to compel some of the mine workers to pay their dues to the union. The strikers on Sunday, Oct. 12, voted to start back to work on the day following. A similar button strike that took place at the New Boston colliery at Mahanoy City lasted, however, for only four days, after which the 500 men and boys who were out returned to work.

On Nov. 9 the miners at the Primrose colliery of the Lehigh Valley Coal Co. at Jeansville went out on strike because one of the workmen brought a wheelbarrow into the mine to aid in the handling of his coal. His fellow employees were opposed to any such radical and undesirable innovation.

Would Work 12-Hr. Day To Get 12-Hr. Pay

There have been some companies in the northern part of the anthracite region, along the Wyoming Valley, who have been working their engineers, fan runners and pump runners 12 hr. a day and paying them for a day and a half. This long day has been the rule for years and the old innovation, made by the establishment of the 8-hr. day, was that the men instead of being paid the established rate for an 8-hr. day received 50 per cent. more. The companies have somewhat generally readjusted matters, so that these 12-hr. men can work 8 hr.; but the men who found the longer day not in any way fatiguing are extremely dissatisfied and object to the change as it lowers their earnings. It is not likely that their plea for a 12-hr. day will be heeded nor will their rate of wage be raised. Even the clerks in the office now work 8 hr., and the companies will hardly be disposed to permit long hours to continue, seeing that public opinion is so strongly against it. The companies do not want to pay for the overtime unnecessarily and then be blamed by the public because they permit it.

It appears that the arrangement which John P. White is willing to make with the mine workers who paid out money without authority and were suspended, is to recognize them under another number and charter. The locals desire their old charter made of force, and they demand that their books be returned. At a conference held on Nov. 10 at the Schuylkill county court house no decision was reached, and the suit of the locals against the union may be pressed after all.

Big Prices Make Miners Want Higher Wages

The high prices at which all bituminous coal that has not been long contracted for is sold has made the miners in central Pennsylvania disposed to find fault with the spring contract. At Philipsburg, which happens to be in Center County, but is really bound up in the Clearfield coal district just across the Moshannon Creek, the miners want an increase of 25c. on the ton. The smaller companies, which have no long-time contracts and may shut down as soon as business gets bad, are quite willing, naturally, to grant all that is asked. Those who have to sell all or most of their coal under old contracts, and who do not want trouble in reducing wages or bankruptcy in maintaining them after the business flurry is over, are strongly opposed to letting the miners break a contract only just signed.

The miners claim that they are paying from a third to a half more for food and clothing than they paid when the scale of 75c. a ton was signed. But contracts are not subject to such considerations, or the operators would be entitled to break them as soon as living prices fell or the price of coal could not be maintained. The miners are equally interested with the operators in the sanctity of contracts. They will suffer with them if a change of conditions is going henceforth to be regarded as permitting a modification of a bond signed only a few months before and having still about 18 months to run.

At Expedit, in Indiana County, it appears that the Italians for the most part were disposed to make demands of the Vintondale Coal Co., while the Hungarians were content with the conditions existing. Apparently certain Italians were evicted for their actions. The miners demanded the right to have a checkweighman and the same prices for their labor as generally obtained in District No. 2. The union has been endeavoring to keep men away from Vintondale, Bracken, Expedit and Twin Rocks.

Somerset County labor troubles are still about the same. The Listie and Hooversville mines are making slight gains, and so are the two workings of the Consolidation Coal Co. that have been having trouble. There has been an enthusiastic meeting at Frostburg, Md., where Vice-President Frank J. Hayes addressed the miners and laid claim for the union for the increases given District 16 during the present year. It is true that increases have been made there, partly to balance union increases elsewhere, but the major part of the liberality shown the men is due to the enlightened policy of the companies and to a desire to invite miners into the region. District No. 16 covers Maryland and the Meyersdale region of Pennsylvania.

President Farrington Is Placed on Grill

On Nov. 9 the impeachment charges against Frank L. Farrington, president of the Illinois District of the United Mine Workers of America, began at Peoria with 16 state officers and nearly 400 delegates present. As will be recalled, Frank Farrington is accused of using the miners' organization for political purposes and with accepting money for political work on behalf of Frank Smith, of Dwight, Ill., who was candidate for governor on the Republican ticket. This is said to be the first time a convention has been called to hear impeachment charges against an officer of the union.

In Oklahoma the strike was settled Saturday, Nov. 11. The operators granted all the concessions asked. These were embodied in clauses 4 and 6. All the Oklahoma mines started to work on Monday, Nov. 13, and it is now hoped that there will be no further troubles till the contract ends on Mar. 31, 1918.

The operators felt it was a poor time to fight union labor even though their cause was good, and though they had no little support among the more reasonable mine workers and the more honorable of their leaders. The best of the men, who were least disposed to quibble about clauses 4 and 6 and for whom these clauses were not in any way written, were among the first to leave when the mines shut down. Had the strike lasted another week or ten days, doubtless two-thirds of the Oklahoma miners would have emigrated to the surrounding producing territory, where labor is scarce and much in demand. The mine operators thought it best to settle before they lost all their men. As it is many drifted away, and it will be at least a week before anything like a full quota of the working force is available.

The Big Election Takes Place on Dec. 12

The election of international officers of the United Mine Workers of America will take place on the second Tuesday in December, which is Dec. 12. The officers will assume office on Apr. 1, 1917, and serve for two years. All members in good standing in all branches of the organization on Dec. 1 will be entitled to vote. The presidential nominees are John P. White, the present incumbent of the office, Des Moines, Iowa, and John H. Walker, Danville, Ill. There is only one nominee for vice-president, the present incumbent, Frank J. Hayes, Collinsville, Ill. For secretary-treasurer, William Green, Coshocton, Ohio, who now holds the office, is pitted against J. L. Sims, of Linton, Ind.

There are eleven candidates for the auditing and credential committee, of whom only three can be elected. Seven men want to act as tellers, with three to be chosen. Eight persons have to be elected as delegates to the American Federation of Labor, and 38 have presented themselves. They are mostly well-known men and include all the present and proposed incumbents of the presidency, vice-presidency and secretaryship, also John Mitchell, Spring Valley, Ill.; Frank Farrington, Streator, Ill.; John Moore, Columbus, Ohio; Alex Howat, Pittsburg, Kan.; John T. Dempsey, Scranton, Penn.; Thomas Kennedy, Hazleton, Penn.; G. W. Savage, Columbus, Ohio; John R. Lawson, Denver, Colo.; Philip Murray, Pittsburgh, Penn.; W. D. Van Horn, Terre Haute, Ind.; William Mitch, Terre Haute, Ind., Thomas Haggerty, Reynoldsville, Penn.; James Morgan, Cheyenne, Wyo.; William Houston, Terre Haute, Ind.; Charles Batley, Charleston, W. Va.; Frank Ledvinka, Bridgeport, Ohio; Robert Gaffney, Bay City, Mich., and lesser lights.

The Late Lewis M. Jones

Lewis Meredith Jones, a mining engineer in the employ of the Bureau of Mines, died Oct. 20, 1916, while leading a mine-rescue crew at an explosion in Mine No. 7 of the Jamison Coal and Coke Co., at Barrackville, W. Va. His death came as a great shock to his fellow employees of the bureau and to his scores of friends throughout the mining world.

Mr. Jones was a man of sterling qualities, clean living, patient, modest and courageous. Although a comparatively young man, he had accomplished important work in forwarding the nation-wide safety campaign.

It was while engaged in leading a mine-rescue crew that Mr. Jones lost his life. It was the noblest impulse that can possess a man that impelled him to voluntarily take charge of the rescue crew in the absence of the regularly trained man for this work; for, by his past

LEWIS MEREDITH JONES

experience and training, his knowledge of mines and mining, he felt that he was the best fitted to do so and, therefore, with his usual sense of duty first, he accepted the task with promptness, with the result that he died in an effort to save others.

Mr. Jones was born in Cleveland, Ohio, in 1883, and received his mining engineering education at the Ohio State University and the Columbia School of Mines, from which latter institution he graduated in 1908. He entered the service of the Federal Government early in 1909, his first work being that of testing mine safety lamps and mine-rescue apparatus, and rescue and investigative work at some dozen mine fires and mine explosions. These investigations gave to him a valuable experience in the coal fields of Ohio, Pennsylvania, West Virginia, Oklahoma, Alabama and Colorado. For a short time he was, successively, in charge of the mine-rescue work of the United States Bureau of Mines at Knoxville, Tenn., and McAlester, Okla. In July, 1910, he was assigned as general assistant to the chief mining engineer, George S. Rice, and was placed in charge of the experimental mine of the Bureau of Mines at Bruceton, Penn. It was here that his tireless, conscientious and capable work bore fruit which will prove invaluable to the mining industry of the country.

By his efforts, under the direction of the chief mining engineer, facts were brought forth at the experimental mine that will prove beneficial to the industry in the years to come. It was established in the experiments which he personally conducted that coal-dust explosions could be limited in their scope by the use of rock-dust curtains and like devices for extinguishing flame. Moreover, these experiments served to exhibit and prove to visiting mining men in a striking way the power and malignity of powdered coal as an agent in coal-mine explosions.

Notwithstanding that his time was always fully occupied, he was ever ready and willing to answer calls to mine disasters whenever his services were required. The following editorial, entitled "The Good Death," and copied from the Pittsburgh *Gazette Times* is a fitting tribute to such a man as he was:

If one could choose the circumstance of his taking off, he might elect to die as did Lewis M. Jones—in striving to save the lives of others. In fact, active duty with him was acute danger. When he and his crew were summoned, there was little assurance that they would return. Theirs it was in the service of the Bureau of Mines to plunge into the dark workings filled with noxious gases, to rescue miners overcome. Most frequently they brought forth only dead bodies, but the chance that a living man might be just ahead added zest to their work.

It was the lure of such a prospect that ended the life of L. M. Jones. He hoped to find some one alive and went too far ahead in the gaseous workings with such a hope in view. Foolhardy he may have been in this instance, but it was the noblest of impulses that prompted him. One can die but once, and death that comes of an effort to save our fellowman is a good death. On the scroll of heroes the name of Lewis M. Jones will be emblazoned.

The Bureau of Mines has done a work of stupendous importance in lessening the perils of the mining industry. It has done much in rescuing men from mines made death holes by explosions and fires, and it is going to do more in the future. Such men as our dead hero have made the bureau what it is today. The country cannot afford to lose men like Lewis M. Jones.

COMING MEETINGS

Tenth Chicago Cement Show at Coliseum, Feb. 7 to 15, 1917. Secretary, B. F. Smith, 210 So. La Salle St., Chicago, Ill.

Illinois Mining Institute will hold its fall meeting Nov. 25, 1916, at Springfield, Ill. Secretary, Martin Bolt, Springfield, Ill.

The Brownsville, Penn., Mining Institute will hold meetings on the first and third Friday of each month at 7:30 p.m. Secretary, G. E. Daugherty, South Brownsville, Penn.

Kentucky Mining Institute will hold its winter meeting on Dec. 8 and 9, 1916, at Seelbach Hotel, Louisville, Ky. Secretary, Ivan P. Tashof, 437 21st St., S. E., Washington, D. C.

The American Concrete Institute will hold its annual meeting at the Hotel La Salle, Chicago, Ill., Feb. 8-10, 1917. Secretary, Harold D. Hynds, 1418 Walnut St., Philadelphia, Penn.

The Rocky Mountain Coal Mining Institute will hold its winter meeting at Denver, Colo., in the Convention Hall of the Albany Hotel, Jan. 22-24, 1917, beginning at 10 a.m. Secretary, F. W. Whiteside, Denver, Colo.

The Coal Mining Institute of America will hold its annual meeting on Wednesday, Thursday and Friday, Dec. 6, 7 and 8, 1916, at the Fort Pitt Hotel, Pittsburgh, Penn. The annual dinner of the Institute will be held on the evening of Dec. 6.

How Illinois Uses a Commission To Prepare Its Mine Laws*

By A. J. Moorshead†

SYNOPSIS—Legislatures should seek the scientific advice of commissions when passing their mining decrees, for the law makers have neither the time nor the experience requisite to decide on the merits of provisions for the protection of mines. A national commission should coöperate with the state commissions, so that uniformity of legislation may be secured.

During the past 20 years of its evolution the coal-mining industry, both in its electrical and mechanical development, has kept well apace with the economic advancement made by the other industries of the nation. Not only are the more modern mines thoroughly equipped with automatic and other devices such as will insure the greatest economy in production, but they are also well fitted for the conservation of life and property.

The thoughtful operators—and there are many of them—do not give closest consideration to lowering the cost per ton of the coal produced. They pay more attention to conserving the life of the mine. As the wrecks of many coal workings plainly testify, this preparation for the future was too often neglected in the past. At all uptodate mines plans are prepared which if carefully followed will bring the greatest total income on the investment.

Mines so conducted, and in addition equipped with injury-preventing and life-saving devices, not only lessen the anxieties of the executive officers and the local supervising forces, but give the owners of the property the most reliable security against loss of invested capital.

Operators and Miners Both Oppose New Laws

It is altogether too true that everywhere the best of rules and regulations have had to be forced on operators and mine workers alike. Both employers and employees vigorously oppose any legislation which the other party independently seeks. The operators and mine workers of Illinois, up to and including the year 1909, were not an exception to this rule.

If we had a single government to the laws of which all were alike subject, there would, no doubt, have been less contention; and the opposition shown to many measures that were offered for enactment would have been far less strenuous. There are few new bills and amendments to existing laws that do not entail additional expense in the operation of the mines. Such enactments, therefore, widen the gulf between the operating costs of competing states. As a result many beneficial measures are opposed for economic reasons only, and the coal-mining industry as a whole suffers from the fact that each state has its own local government.

No better illustration of this condition of affairs can be cited than the situation of the Illinois coal industry in 1909. At the general session of the state legislature in that year about 27 bills were presented to the House of Representatives and the Senate, amending and adding to existing mining laws. The bills covered almost every operation in mining and would have materially added to the cost of production if they had been permitted to pass.

To promote the passage of the bills the mine workers maintained a large and extremely active lobby, and to oppose their passage the operators maintained one which was equally strong and aggressive. As a result bitter contentions arose at every meeting of the committees on mining in both House and Senate.

At the end of three months of spirited campaigning, the operators presented a bill for the establishment of a mixed commission to be composed of mine workers, operators and representatives of the public. The duties of this commission were to consider all bills in connection with the revision of the mining law before they were enacted by the general session of the legislature which would consider them in 1911.

All Interests Represented in Commission

This bill relieved the legislators of both houses as much as it did the operators and mine workers. The governor appointed the following commissioners: Representing the public—Dr. J. A. Holmes, director, United States Bureau of Mines; H. H. Stoek, professor of mining engineering, University of Illinois; Dr. Graham Taylor, Chicago, Ill. Representing the mine workers—John H. Walker, Charles Burch and Bernard Murphy. Representing the mine operators—Richard Newsam, president of the Illinois Mining Board; Glenn W. Traer and J. W. Miller.

The work of this commission was so satisfactory that the mine workers and operators joined in a petition to the governor asking for its continuance, and since then the legislature has made reasonable appropriations for its support.

Among the important changes made were: (1) The reorganization of the State Mining Board; (2) the establishment of a standard for illuminating oils; (3) an increase in the number of state mine inspectors, to the end that mines might be more efficiently examined; and a requirement that all mines be inspected periodically; (4) a change in the law relating to safety lamps, making the provisions more specific; (5) the promulgation of a standard for the quality and size of powder; (6) the elaboration of a uniform plan for the sinking, operation and plugging of gas and oil wells, to the end that the coal mines might be protected from incursions of gas and oil; (7) the formulation of rules for the establishment and operation of underground fire-fighting apparatus.

Innumerable changes were made affecting ventilation, the storage of oil, the maximum electric voltage permissible and the protection of live electric wires. Rules were formulated defining the duties of mine examiners. In arriving at the conclusions, the commission thoroughly investigated the provisions in force not only in the United

*Paper entitled "Commission Plan of Preparing Mining Legislation in the State of Illinois," read before the Uniform Mine Legislation Section of the American Mining Congress at its annual session, Hotel La Salle, Chicago, Ill., Nov. 13, 1916.

†President, Madison Coal Corporation, 1111 Karpen Building, Chicago, Ill.

States but in other countries having coal mine legislation. The work of the commission since the period ending 1911 has been equally active. It has kept the laws well up to the new necessities which have arisen out of the changing order of mining affairs. Among the new recommendations are: The establishment of fire-fighting and rescue stations; an amendment to the shotfirers' law; an amendment to the law regarding miners' qualifications; a provision giving the mining board full control of the state mine inspectors; a provision for the protection of workmen at shaft landings, and another requiring that the passages to escapeways and refuge places be kept clear of obstructions; regulations providing additional precautions to be taken in the handling and distributing of explosives; a provision assuring that the examination of miners will be made more thorough and complete; a change of rules revising the qualifications required of mine examiners; a provision for the protection of abandoned shafts, and many other no less important changes.

As at its inception, the Mining Investigation Commission consists of nine members: Representing the public—H. H. Stoek, Urbana, Ill.; J. G. Grossberg, Chicago, Ill.; J. E. Williams, Streator, Ill. Representing the mine workers—John H. Tuttle, Harrisburg, Ill.; William Hall, Springfield, Ill.; R. J. Willson, secretary of the commission, Marissa, Ill. Representing the operators—Thomas Jeremiah, chairman of the commission, Willisville, Ill.; W. D. Obcamp, Lincoln, Ill.; Rice Miller, Hillsboro, Ill.

Example of Illinois Might Well Be Copied

In the advance of coal-mining practice in Illinois no feature is more creditable to the operators and mine workers than the establishment of a commission plan for the considering of changes in old laws and the making of new ones. Every point in a mine from the tipple head to the face of the working is surrounded by danger, and it is far more sane and businesslike to submit such important matters to a competent tribunal than to fight them out before a legislative body; for the law makers appointed by the public to pass on legislation are, with some rare exceptions, totally incompetent to decide on appropriate mining enactments, even if they had the time necessary to devote to the subject.

It is now, I believe, the general feeling among those who have given the subject study, that no one thing could add more to coal-mining efficiency and to the protection of all those interested in the industry than the establishment of a similar commission in every coal-mining state. Coupled with it there should be an Interstate Mining Investigation Commission, to consider the subject of unifying the laws as far as practicable. This step in itself, if taken, would place the industry on a higher and more scientific basis and help to make mining one of the most honored industries of the nation, a position it fully deserves to occupy.

Operator's Duty To Support Surface of Land—Where a coal company that owned land in fee conveyed a lot on the surface, reserving the right to mine beneath without liability for any injury done the surface, a third person who afterward bought the land from the original purchaser of the lot under a deed reciting the reservation above mentioned is not entitled to recover for damages done the surface or the improvements thereon through impairment of the surface support in mining operations. (Pennsylvania Supreme Court, 97 Atlantic Reporter, 1033.)

Coal-Mining Kinks

Coal Age has just got out a book entitled "Coal Mining Kinks." This little volume is the neatest, the most interesting and by far the most valuable treatise dealing with various phases of practical coal mining that has ever been published. In fact, we are quite sure that no similar work of this kind has ever before been compiled by anyone. The book contains 104 pages and is substantially put up in an attractive binding.

All of the suggestions are illustrated with the same class of drawings that appear in *Coal Age* each week. Altogether there are 171 practical kinks, each and every one applicable to some operation in connection with the business of producing coal.

Coal Age has never attempted in its editorial pages to vouch for any of the books or pamphlets it has published. However, we feel that this particular book contains so many practical ideas that we are desirous of having our coal-mining friends place the little volume in their technical library.

Annual Meeting of Illinois Mining Institute

The fourth annual meeting of the Illinois Mining Institute will be held at the City Hall, Springfield, Ill., Saturday, Nov. 25, starting at 10 a.m.

Mayor Charles Baumann will make the address of welcome, to which William M. Burton, president of the Institute, will respond. The following papers will then be read: "Underground Management," by D. D. Wilcox, assistant superintendent of the Superior Coal Co., Gillespie, Ill.; "Commercial Energy," by William Hartman, State Mine Inspector of the 9th District.

The election of officers will be held in the afternoon, after which a paper on "Machine Mining in Illinois from Its Introduction to the Present" will be read by F. E. Weissenborn, superintendent of the Consolidated Coal Co., of Staunton, Ill., followed by a discussion and a business session.

The banquet in the evening will be held at the St. Nicholas Hotel at 7:30.

Meeting of Rocky Mountain Coal Mining Institute

The winter meeting of the Rocky Mountain Coal Mining Institute will be held in Denver, Colo., during Stock Show week, Jan. 22, 23 and 24, 1917, in the Convention Hall of the Albany Hotel.

The following papers will be read: "Methods of Working a 3-Ft. Seam of Coal Pitching 10 to 20 Deg.," by Samuel Dean, of Delagua, Colo.; "Mine Fires," by Prof. J. C. Roberts, of Denver, Colo., and a joint paper on "Mine Ventilation and Its Application to Economical, Safe and Modern Mining," by D. D. Dodge, of Cokedale; Joe Smith, of Trinidad, and Henry-King, of Denver.

The annual election of officers will be held, and the committee on entertainment promises an interesting and instructive program. The railroads will make special rates which will approximate one fare for the round trip. F. W. Whiteside, mining engineer, Victor-American Fuel Co., Denver, Colo., is secretary-treasurer and all communications regarding the meeting and all written discussion on presented subjects should be addressed to him.

Co-operation the Keynote of the American Mining Congress

SYNOPSIS—The most successful meeting of the American Mining Congress. The industry is acquiring a voice because it is becoming a unit. It proposes to do bigger things by coöperation than it has ever done during its years of strife. It is the hope of the congress that the wastes of production may be removed by a specialization of purpose, just as the wastes of education have been saved by a specialization of training.

Is it only a dream, or is the American Mining Congress really going to induce us to change the wastes and clashes of competition for the smooth-running interlocking gears of coöperation? Are we really going to lay less stress on mastery in markets and more on the technical problems before us? If we could only cease our internecine strife and quit battling with each other to turn our attention to the forces of nature, surely we should do better, just as everybody acknowledges Europe would do better if instead of fighting for mastery she could turn her whole attention to subduing the forces of nature and turning them to her welfare.

Nothing is here said as to the rights and wrongs of this industrial warfare, any more than anything is said of the merits of the embattled nations in Europe. We have our ideas about these matters, of course, as all sane men have; but this we know—that the man whose mind is on fighting his neighbor physically or industrially has his mind largely off the problems of operation, development, safety and other desirable things.

More Anxious for Business Than Dividends

We pay for our competition very dearly, as E. W. Parker showed in the matter of the retail coal operator who hauled coal by wagon several miles into his rival's territory. We do not know what we all lose by trying to achieve something to the detriment of the business success of a rival. We seem to rejoice more in what we take from our neighbor than in what we make for ourselves.

There was a large attendance at the American Mining Congress which assembled Monday, Nov. 13, and much enthusiasm; but if the interest of those attending the meeting comes to an end with the closing of the session, it closes with its preachments largely wasted. The whole year long there should be active work to make the industry in the United States operate harmoniously.

If an engine groaned, creaked, pounded and wheezed as does the mining industry, ran fast awhile then slacked up and stopped going, if it showed a lack of governors and an overabundance of leaks, it would not do any good were a body of expert engineers to assemble by the moribund mechanism for four days and then adjourn without a nut tightened, a gland repacked or a new part cast. The congress may have done this very thing, but the men back of it and those who attended it do not think so.

Other meetings will be necessary, the public in general will have to be educated, but the old rattletrap way, with industry in a hurry and industry in a faint, is bound to pass when sane consideration is given it by men who are so big that they are quite clever enough to make important industrial history, whenever they are so disposed.

The convention was called to order at the hotel La Salle, Chicago, Ill., at 2 p.m. Monday, Nov. 13, Harry C. Adams, the chairman of the committee of arrangements, presiding. Addresses of welcome were made by Edward F. Dunne, governor of Illinois, William H. Thompson, mayor of Chicago, and J. W. O'Leary, president of the Chicago Association of Commerce. After the response to these addresses of welcome came the three-minute responses from the several states, in which each speaker in a few brief words forcibly urged the needs of each state for legislation which would help it to operate its mineral resources unhampered by unnecessarily restrictive legislation.

The Grievances of the Several States

In these responses a frequent complaint was that too many laws are hampering the industry. Another made by nearly every coal-mining state was to the effect that it was seriously in need of a system of uniform cost accounting. W. S. Bogle, an Indiana operator, made an earnest plea for the removal of legal obstacles that prevent limited coöperation among those engaged in any business. He praised the broad view taken by the Federal Trade Commission on this question.

A resolution based on replies from mine operators from Tennessee was presented by A. H. Purdue. It reads as follows:

> Resolved that the greatest needs of the mining industry in Tennessee are: Coöperation among coal-mining operators, under proper control, for the purpose of securing reasonable prices; the removal of the state convicts from the mines or the making of the state a party to the proposed coöperation; a uniform system of cost accounting for the operators; improved railroad facilities into the coal field and into the area to the south and southeast, including the seaboard; and the development of the state's manufacturing industries to provide a home market for its mineral resources.

Dr. I. C. White, chief geologist of West Virginia, predicted that within five years his state would produce more bituminous coal than Pennsylvania. The crying needs at present are for more markets for coal within the state and for more coal-carrying rolling stock.

Seek To Equalize the Legislative Handicap

But a morning session had already been held by those interested in the Uniform Mining Legislation Section. After J. G. Grossberg, of Chicago, had explained that the meeting was called with the hope that uniform mining legislation might be pressed from a conversational stage to one more promising of results, Robert H. Harlin, of Seattle, representing the United Mine Workers of America, pointed out the evils of allowing the mines inspection service to be at the mercy of the political whims of each change in state administrations. He also urged that all mine foremen be required to pass a technical examination before being allowed to go on duty. He contended that it is highly necessary that mine superintendents be obliged to take the same examinations as mine foremen.

During the discussion of Mr. Harlin's paper the opposition of the anthracite operators to the plan for uniform

legislation developed. It seems the consensus of opinion among the operators of anthracite mines that the conditions surrounding their industry are so dissimilar that it would be impracticable to attempt to frame a set of laws which would apply to the bituminous coal industry and which at the same time would impose no undesirable restraints on the mining of hard coal. George S. Rice, chief mining engineer of the United States Bureau of Mines, at this point expressed the firm conviction that there are certain fundamentals which apply equally and without discrimination to the bituminous and to the anthracite industry. H. H. Stoek, of Urbana, Ill., also took a stand to the effect that uniform legislation is entirely feasible, and he pointed out that the need was so great as to make some definite action of the meeting desirable in the interest of fairness between states.

Van H. Manning, director of the Bureau of Mines, in a thoughful paper entitled "What Can Uniform Legislation Hope To Accomplish?" declared that by such legislation litigation and waste could be more readily reduced, accidents could be further decreased, disease could be largely prevented, the national efficiency could be much augmented, and the value of mining properties could be made more stable.

A symposium was opened in the afternoon by an address entitled "Advisability of Preparing Mine Legislation Through Commissions," by S. A. Taylor. He was followed by W. R. Woodford, who discussed the "Commission Plan in Ohio," and by A. J. Moorshead, who delivered the interesting address on the "Commission Plan in Illinois," which we reprint under the title "How Illinois Uses a Commission To Prepare Its Mine Laws," on pages 846 and 847 of this issue. J. E. Williams discussed "Desirable Points of Similarity" in legislative enactments, and Michael Scollard pointed out salient points in the "Commision Plan in Indiana."

General Session Discusses Safety and Rescue

On the second day articles were read by Albert H. Fay, of the United States Bureau of Mines, on "The Record of Mine Safety Work," and H. H. Stoek, of Urbana, Ill., read a paper on "State Mine-Rescue Methods."

This paper contained many good points, and it would not be well to spoil the whole article by making short extracts from it. He spoke against the use of Pullman rescue cars for state rescue work and in favor of those made by the conversion of box-cars. He advocated the use of automobile trucks as less expensive to maintain and equip than rescue cars. He argued that material could be more cheaply sent by express or automobile truck than by using a Pullman car for that purpose.

Mr. Stoek also said that the Illinois Mine Commission felt that indiscriminate training in the use of oxygen breathing apparatus would only make likely the use of such equipment by men who did not understand it, and it might well lead rather to increased fatalities than to their diminishment.

He found that much of the first-aid training was discontinuous and therefore superficial. The fact that mine foremen and firebosses could not get certificates from the State Mining Board without a knowledge of first aid made the applicants anxious to acquire the minimum quantum of knowledge which would enable them to pass their examinations, but did not give them any inducement to remain in practice.

C. W. Goodale, of Butte, Mont., read an article on "Safety Work as an Investment," and then a symposium on the "Responsibilities and Duties in Mine Safety Work" was held, with Thomas M. Gann, of Knoxville, Tenn., talking regarding the operator; David Ross, of Springfield, Ill., expressing the obligations of the miner, and Judge W. D. Hoag, of Joplin, Mo., making clear the interest of the public.

In all of this it would seem the aim and work of the National Safety Council is encroached upon. It seems well that the American Mining Congress should attend strictly to business and its relation to legislation. In his address at the banquet Carl Scholz puts safety first, and in a sense it must be so placed; but not in the American Mining Congress, which should keep itself to certain definite purposes—the relation of law to mining enterprise.

So we leave the safety men who would have been in more appropriate company at Detroit, to keep company with the coal men who discussed in the afternoon the exterior and financial problems of the mine. C. M. Moderwell, of Chicago, Ill., presided. S. A. Taylor, of Pittsburgh, made a report on "Uniform Cost Accounting" for his committee, and Ralph Crews, of Chicago, Ill., addressed the meeting on "Coöperation in the Marketing of Coal." A discussion under the ten-minute rule followed, in which a large number of operators took part. This was followed by more debate under the five-minute rule, and a report by the Committee on Workmen's Compensation written by T. L. Lewis, of Charleston, W Va., chairman.

Not Even Coal Men Object to Metal Prices

George Otis Smith and C. E. Lesher, of the United States Geological Survey, then followed with a paper on "The Cost of Coal," in which there were many points of interest and, it may be added, many points of contention. They pointed out very truly that metals are usually purchased by the ultimate consumer not in their natural state but as manufactured goods, and these goods are regarded as a capital outlay. The coal purchased is immediately consumed and is a cost of living, insofar as it enters into domestic consumption. Consequently, the purchaser of metals looks upon higher costs with admirable composure, while the buyer of coal regards an increased price with "high temperature." Public opinion is more explosive about high costs for coal than about high costs for any other product except perhaps gasoline.

The authors divided costs as follows: Cost of mining, 70 to 75 per cent.; materials, 16 to 20 per cent.; insurance and general expense at mine and office, 2 to 4 per cent.; taxes from less than 1 to 3 per cent. (bituminous coal) and 3 to 7 per cent. (anthracite); selling cost, nothing to 5 per cent., and recently the direct and indirect cost of workmen's compensation, which may reach 5 per cent. for bituminous coal.

They stated that mine worker, trainman and wagon driver together received fully half of the price of the anthracite delivered at the house, and the same three classes of labor not less than half the price for the cheaper soft coal. The landlord, bondholder and stockholder of the coal company and the railroad together receive about $1.15 per ton of the cost of anthracite and only 50 to 75c. per ton of the cost of bituminous coal.

The authors quoted Professor Mead, of the University of Pennsylvania, as saying that the delivery of coal is costing the dealers 50c. per ton more than is necessary.

But the Geological Survey cannot bow to the audience without a reference to the West. So these authorities then quoted with approval a statement that the valuation of coal east of the Rocky Mountains at 1c. per ton would place the resources of the coal fields at 20 billion dollars. If a corporation held this, the interest charges alone would involve a charge of $2 per ton against a production of 600 million tons a year. "Incidentally these startling figures furnish a strong argument for the present policy of the National Government in retaining the ownership of the public coal lands, at least up to the time when market conditions justify the opening of a mine."

Similarly, we could get some marvelous figures by capitalizing the aërial ocean with which we are surrounded. The interest on it would put such a value on it that we could ill afford to own it. It should therefore be held in trust by the Geological Survey at least till we are ready to breathe it, at which time it could be doled out to us at an appropriate figure at so much per cubic yard with due provision against wasteful use.

A paper was then presented by Warren Roberts, of Chicago, Ill., entitled "New Ideas in the Preparation of Eastern Coal." "The Disadvantage of Widely Fluctuating Coal Prices" was discussed by Indiana, Oklahoma and West Virginia operators. In the evening the directors of the institute were elected and routine business transacted. The morning meeting on Wednesday was a general session of coal and metal men, with an address by E. N. Hurley, chairman of the Federal Trade Commission.

Mr. Hurley believes that "if the facts show that in the coal industry unrestricted competition is the primary cause of business ills rather than a cure for them, then the matter is up to Congress and to the public. I personally," he adds, "would favor any measure of Government regulation that may be found necessary and suitable in order to effect a real remedy."

Representatives Present from 31 States

Among those present at the meeting were the following:

Alabama—W. E. Henley, Birmingham; J. R. Pill, Corona.

Arizona—C. F. Willis, Tucson; J. H. Robinson, Prescott.

California—Norman Bridge, Los Angeles; C. E. Bugg, Cornelian Bay.

Canada—A. T. Harrer, Edmonton; S. G. Marsh, Quesnel.

Colorado—H. I. Seeman, Dawson; G. E. Collins, Denver; Mrs. J. M. McClave, Denver; James Dalrymple, Denver; J. M. McClave, Denver; H. E. Minnier, Lawson; H. S. Sands, Denver; E. H. Weitzel, Pueblo; M. W. Ball, Golden.

District of Columbia—J. F. Callbreath, Washington; A. H. Fay, Washington; R. W. Gardiner, Washington; Van H. Manning, Washington; G. S. Rice, Washington; Mrs. Nellie C. Upham, Washington; David L. Wing, Washington; Paul Wooton, Washington; H. H. Young, Washington.

Florida—F. E. Mariner, Gull Point; W. A. McGuire, Ocala.

Idaho—Eugene Thomas, Osborne; E. K. Soper, Moscow; Vivian Green, Murray.

Indiana—David Robb, Dante; Charles Kettlebrough, Indianapolis; William Johnson, Vincennes; W. D. Hamer, Indianapolis; C. J. Fletcher, Indianapolis.

Illinois—J. R. Brown, T. Milton, J. H. M. Claggett, S. A. Hales, J. K. Dering, W. A. Ferguson, F. W. Sager, D. B. Sebastian, H. H. Small, F. B. Smith, Thomas Somerville, Carl Scholz, J. D. Swain, E. O. Wiederauders, M. W. Sherwood, A. H. Skinner, A. A. Norton, P. A. Nelson, T. Pardue, J. T. Peyton, M C. Reed, M. G. Rosenthal, E. E. Robird, James Needham, A. J. Moorshead, H. E. Meagher, Elmer Martin, P. D. McKenzie, G. M. Lott, E. G. Lot, L. E. LaFluer, S. B. Kirk, T. Edward King, H. H. Johnson, F. S. Hill, F. H. Harwood, John Ericson, G. H. Cushing, E. Chamberlain, E. T. Blat, C. R. Boherg, C. D. Behan, R. H. Barry, V. F. Baker, C. O. Axwell, W. F. Scott, Harry C. Adams, Nellie Ager, Hunter Anderson, M. R. Blish, W. E. Brischoff, C. W. Claybourne, A. B. Conover, W. T. Denniston, R. Dick, J. Dick, G. F. Dougall, O. A. Eastman, Frank J. Foley, Jacob G. Grossberg, Julius S. Holl, E. M. Hooey, H. H. Hopkins, C. W. Jackson, A. G. Kinyon, E. H. Leslie, C. B. Lihme, T. N. Mardue, H. S. Mikesell, A. U. Miller, E. Noble, S. W. Osgood, H. B. Pruden, C. A. Parks, H. W. Seaman, T. H. Semple, T. A. Shaw, S. S. Shive, G. N. Simpson, G. E. Sisley, L. H. Smith, H. N. Stronck, C. A. Tapper, Walter S. Vogle, N. L. Warford, W. C. West, E. E. White, David Williams, J. A. Williams, L. N. Williams, F. O. Williamson, O. N. Wilms, T. C. Worth, H. G. Wuerzinger and T. M. Wuerzinger, all of Chicago; H. H. Stoek, Urbana; J. A. Tuttle, Harrisburg; J. P. Reese, Gillespie; O. G. Scott, Springfield; H. H. Hall, Springfield; F. W. Cunningham, Oak Park; F. W. DeWolf, Urbana; Thomas Jeremiah, Willisville; I. F. Jorgensen, Gillespie; A. W. Lane, Evanston; W. N. Logan, Bloomington; Rice Miller, Hillsboro; W. D. Obcamp, Lincoln; P. H. Secrombe, Maywood; R. J. Wilson, Marissa.

Iowa—J. I. Clarkson, Albia; J. A. Wentz, Chariton; T. L. Evans, Lockman; E. M. Gray, Des Moines; C. G. Sweeney, Des Moines; E. M. Cooper, Galena; Philip Callen, Pittsburg; C. A. McNeill, Columbus; W. H. Skedmore, Columbus.

Kentucky—F. P. Wright, Bevie; Alexander Blair, Jr., Baskett.

Michigan—T. D. DeSollar, Hancock; F. W. McNair, Houghton; H. W. Fesing, Hampton; Alexander Maitland, Negaunee.

Minnesota—M. H. Brede, Minneapolis; E. H. Comstock, Minneapolis; G. H. Crosby, Duluth; G. H. Crosby, Jr., Crosby; P. W. Donovan, Minneapolis; J. E. Hodge, Minneapolis.

Mississippi—E. T. Adams, Corinth.

Missouri—W. B. David, St. Louis; A. J. Burnham, Joplin; P. H. Greenlaw, St. Louis; G. W. Redden, St. Louis; H. B. Wolcott, Joplin; W. B. Shackleford, Webb City; Otto Ruhl, Joplin; W. L. Schnick, St. Louis; P. H. Easby, Webb City.

Montana—E. B. Coolidge, Maiden.

Nevada—A. A. Codd, Reno.

New Mexico—W. W. Risdon, Albuquerque; J. M. McAlpine (Oklahoma City), Hanover; T. H. O'Brien, Dawson.

New York—R. L. Hoffman, Schenectady; R. J. Inland, Amityville; L. E. Ives, New York; H. M. Payne, New York; Floyd W. Parsons, New York; J. E. Sample, New York.

North Dakota—A. W. Peterson, Haynes; Hensen E. Smith.

Ohio—H. E. Loomis, Cleveland; W. A. Miller, Cincinnati; W. D. M. Kinney, Columbus; W. H. Nill, Massillon; G. M. Savage, Columbus; Major A. Vignos, Canton; Edward Christman, Massillon; V. K. Bowman, Canton.

Oregon—F. W. White, Bourne.

Pennsylvania—E. Boon, Pittsburgh; H. N. Byus, Bolivar; J. F. Bevan, Pottsville; R. C. Becker, Pittsburgh; H. M. Chance, Philadelphia; W. R. Crane, State College; L. F. Crawford, Pittsburgh; E. B. Day, Pittsburgh; Charles Enzian, Pottsville; Baird Halberstadt, Pottsville; G. H. Halberstadt, Pottsville; J. M. Humphrey, Wilkes-Barre; W. J. Johnson, Pittsburgh; Thomas Kennedy, Hazelton; J. L. MacBumby, Philadelphia; James Matthews, Shenandoah; W. R. McTurk, Philadelphia; M. J. McGrath, Lost Creek; John McPherson, Bolivar; E. J. Newbaker, Wilkes-Barre; E. W. Parks, Wilkes-Barre; A. W. Polleck, Antroni; J. B. Rogers, Pottsville; H. M. Search, Bethlehem; J. D. Simpson, Windber; D. Smith, Pottsville; S. A. Taylor, Pittsburgh; J. J. Vigrean, Pittsburgh; F. E. Waite, Du Bois; H. M. Wilson, Pittsburgh.

South Carolina—T. H. Chambers, Spartanburg.

South Dakota—R. T. Conover, Custer; Henry Schmitzel, Deadwood.

Tennessee—T. M. Gann, Knoxville; John Houser, Mascot; J. E. McCoy, Knoxville; A. H. Purdue, Nashville; C. M. Seymour, Knoxville.

Utah—E. C. McGarry, Salt Lake City; J. E. Meyer, Salt Lake City; B. S. Rupp, Salt Lake City.

Virginia—Lee Long, Dante.

Washington—W. W. Bixley, Spokane; R. H. Harlin, Seattle; G. C. Rhodehamel, Spokane; H. S. Taylor, Seattle; Sidney Norman, Spokane.

West Virginia—L. H. Harrison, Charleston; F. S. Mott, Charleston; E. N. Zern, Montgomery; I. C. White, Morgantown; T. L. Guis, Charleston.

Wisconsin—H. O. Granberg, Oshkosh; H. R. Snyder, Milwaukee.

Wyoming—L. W. Trumbull, Cheyenne; C. A. Barnard, Gebo.

The following had exhibits at the convention:

Haggard, Marcusson & Co., R. & J. Dick, Ltd., Central Foundry Co., State of Arizona, John A. Roebling's Sons Co., Goodman Manufacturing Co., General Electric Co., Justrite Manufacturing Co., Macomber & Whyte Rope Co., Jeffrey Manufacturing Co., Link-Belt Co., Miller, Earle & Miller, Ameling Core Drill Co., Monroe Calculating Machine Co., Electric Storage Battery Co., Tool Steel Gear and Pinion Co., Florida Oil Flotation Co., United States Bureau of Mines, Christman-Massillon Co., Draeger Oxygen Apparatus Co., "Coal Age" and "Engineering and Mining Journal," Stromberg-Carlson Telephone Manufacturing Co., Vulcan Fuel Co., American Mine Door Co., Sullivan Machinery Co., "Mining World," J. D. Fate Co.

(To be continued in next issue)

Editorials

Two Important Inquiries for the Trade Commission

The Federal Trade Commission was requested by the Senate on June 22 of this year to make an investigation as to the increase in anthracite prices. The resolution, numbered 217, was submitted by Senator Gilbert M. Hitchcock of Omaha, Neb., the publisher of the *World-Herald* of that city. It runs as follows:

Resolved, That the Federal Trade Commission be, and it is hereby, requested to make an immediate investigation into the operations and accounts of the leading companies producing anthracite coal for the purpose of ascertaining the facts concerning the recent increase in the price of anthracite coal and report the same to the Senate during the present session of Congress, if possible.

Resolved, That the commission be requested to include in its report a showing of the relation between the cost of labor and the price of anthracite coal prior to said increase and at the present time.

It might appear that the anthracite companies had been sufficiently investigated. Unfortunately, the investigations have been rather persecutions than attempts to discover the truth. An inquiry conducted for the purpose of obtaining the facts would doubtless be welcomed, for the operators have nothing to hide. It is certain that the judgment of the Federal Trade Commission would be marked by candor and would inspire respect.

The only trouble would arise from the possible action of the press in distorting the testimony. The recent increase in the price of anthracite coal by the retailers, and possibly by the independent coal operators also, gave the newspapers a good opportunity to repeat their old performance of assailing what is known as the Coal Trust. To their credit most of them did not do it. Instead they really made an attempt to ascertain the facts.

Never had conditions seemed more favorable to malice and misrepresentation. In fact it took real discrimination to avoid falling onto the most plausible story—that the trust was robbing the public. But the press actually made inquiries and found it was not true and as a result their articles, if a little contradictory and uncertain in tone, were abundantly fair, despite the fact that one of the leading protagonists of the coal operators hopelessly blundered in his public statement and flatly contradicted the matter sent out by the Anthracite Bureau of Information.

So perhaps we are going to see an inquiry which will be a square deal for everybody. An honest commission and a fair public will constitute a new heaven and a new earth such as we have long hoped for and never yet seemed likely to realize.

Another resolution was presented in the House of Representatives on Aug. 18, 1916, which seems wholly meritorious. It is numbered 352, and its sponsor was Henry T. Rainey, of Carrollton, Ill. It runs as follows:

Whereas, It is alleged that unfair methods of competition are widely practiced in the bituminous coal-mining industry of the United States; and whereas, it is alleged that in consequence thereof the industry in many districts has been demoralized financially, and numerous operating companies have been forced into receiverships; and whereas, it is also alleged that in consequence thereof some two hundred million tons of coal are permanently lost to the nation each year by unwise and improvident methods of mining; and whereas, it is further alleged that in consequence thereof some five hundred thousand employees at the mines are kept idle from one-fourth to one-third of the working time, with much ensuing hardship and loss to themselves and those dependent upon them; and whereas, such conditions, if existing in the bituminous coal industry, vitally touch the interests and welfare of the public as a whole; therefore, be it

Resolved, That the Federal Trade Commission be, and is hereby, directed to begin and make inquiry immediately into the conditions in the production and distribution of bituminous coal and to report the facts to Congress with recommendations.

It is probable that this investigation will prove productive, educating the public regarding the unfortunate conditions in the bituminous coal industry. Perhaps a solution of the situation will be found in working nine hours in the winter and only seven hours in the summer, and in permitting a degree of coöperation between mining companies in their selling activities.

The Retail Anthracite Trade

The anthracite retailers now find themselves in a position somewhat similar to that of the shippers. If the former were in shape to take advantage of their competitors' shortage of coal, and make quick deliveries, they could pick up considerable new business. While the big shipping companies are only anxious to take care of what they have on the books from their regular customers, the dealers are endeavoring to gain new trade that will be of value to them when the present conditions subside. This is another cause for the somewhat inflated ordering and the insistent demands on the shippers.

In spite of the abnormal market, some distributing centers, such as Philadelphia, for instance, have probably paid considerably less for fuel than other large cities. The real high prices were never reached in Philadelphia, and it is really remarkable to find so few of the individual shippers offering premium coal there and at the same time taking fairly good care of their regular trade. The dealers are inclined to wonder whether it means the establishment of a new policy, or only another manifestation of the present unusual conditions, or whether the real high prices will come later in the season.

To offset this, however, there is the always recurrent exception, and that is of one shipper who almost openly offers his production each day to the highest bidder. In a general way the only high prices have been created by the dealers themselves, who have willingly offered 25 to 50c. above circular on sizes of which they were in short supply. They did this largely because if they were accommodated by a fellow retailer, as is sometimes the practice, they paid him 40c. per ton above the wholesale delivered prices. This has been the popular rate of exchange, but there has not been a great deal of it, because storage coal at regular prices has kept the rates down on nut and pea, and no one has had sufficient stove on hand to be of any assistance to his competitor.

A visit to the sales offices of the big shipping companies these days reminds one of a retail coal dealers' conven-

tion. It makes no difference whether dealers have purchased coal from the companies for several years. It is a case now of the retailers swallowing their pride in order to keep in business, since so many of them have been neglected by the smaller shippers. They surely know now where the coal really is and take a chance of at least getting a few cars. The remarkable part of it all is that the once greatly maligned big companies are actually giving such dealers some shipments. Of course most of it is storage coal, but with the weather conditions so favorable to rescreening there is no doubt of its good quality, despite its somewhat dull color.

Ill Repute of Land Surveyors

To an attorney at court who is involved in the settlement of a land dispute nothing is more inexplicable than the variances in the surveys of the same piece of property made by different engineers. Nothing establishes more clearly in his mind the fact that lawyers are not the only rogues and doctors not the only charlatans.

He argues that surveying is an exact science and can be pursued to such a degree of accuracy that there need not be a divergence of so much as a tack's head in the determinations of two surveyors. There are men somewhere, he is confident, who can survey correctly; but, apparently, they are not to be found about that county court house.

He forgets that the land over which such extended and expensive lawsuits are being waged once sold for about a dollar an acre and was worth perhaps not half that much, and that the principles of merchandising provide that the cost of selling should be less than the value of the thing sold. So what could be done for such a sum of money as was available?

It was not surprising if the earlier surveyor lined his compass high on the trees, which leaning down hill caused him to run his survey continuously to the high side of a straight line and to so continue there till a hill, perhaps on the opposite side, gave his line a contrary bias. The slope of a tree will lead a compassman uphill if he lines on the trunk where it first limbs out and plants his jacob staff in line with the bole.

And there were other devious sources of error. Compasses often were not of pure brass. An alloy of iron entering into their composition is said to have often so deflected the needle that the lines run with certain compasses could not be duplicated with any others.

All of which makes it hard where the actual corners are lost to determine a line regardless of such problems as: What variation of the compass was assumed when the original survey was run? And what allowance did the surveyor allow to protect the buyer against loss?

Suppose we enter a dry-goods store and buy a yard of calico. The saleslady measures it off without troubling about the pull she gives the fabric, without much care as to the correctness of the number of inches in the piece, which may or may not lose the thickness of the thumb in the laying out of each yard. She slashes off the length without much care as to the squareness or straightness of the cut. It is near enough for cheap goods. It is better to give a little too much than to waste unnecessary time on the sale or disgruntle the purchaser by short measure and long delay. And the buyer is every bit as indifferent as the saleslady.

But suppose in the night a mysterious change converted the calico into a cloth of gold. The morning might find the purchaser measuring the fabric with the yardstick, squaring it on the table edge and wondering if he had the whole material for which he had bargained.

Equally mysterious changes come over land in these days of economic development. We may talk of stock inflation, but most of it is a puny performance compared with the farmer's achievements in possessing himself of increment. Many times land originally selling for about a dollar brings $200 an acre after the life has been taken from it by years of none too wise farming. And coal lands have also shown similar changes in value.

It is when these changes occur that the more honest and most capable engineers are at fault. There is no correct solution. There are several that are not unfair, and when the lawyers and surveyors gather in court there is bound to be disagreement; and maps are exhibited that look like fraudulent presentments, so grievously do they differ.

When, however, the maps are prepared to show the relation between points underground and recognized monuments on the surface—houses, barns, roads and what not—such maps quite usually tally, and the lawyers with some surprise agree that for once they have encountered what they are persuaded is a miracle of nature—an honest and competent surveyor.

Coal Earnings as a Barometer of the Market

It has been pointed out that inasmuch as the financial receipts of some of the hard-coal companies are not falling off the production must still be at a high level; but it must be borne in mind that the circular rates are far in advance of those of one year ago. Now egg and stove both net 30c. more at the mines, chestnut 25c., and on pea, which is moving in large volume, the advance is from 75 to 90c. per ton. Pea coal, it will be remembered, was selling at $2.05 last year.

In connection with this it might be interesting to note that a representative of one of the most important middle houses remarked this week that his firm had not handled any of the $6, $7 or $8 coal on less than $1 per ton commission. It is these houses that are apparently bemoaning the small production, car shortage, etc.; but even at that they would not want conditions to change.

Scarcity of Anthracite in the Middle West

Receipts of anthracite in the Middle West are most unsatisfactory, and retailers are now beginning to offer premiums for tonnage. Shipments by the independent companies have been sold as high as $2 above circular prices, the order to be accompanied by a certified check. The old established companies' stocks are being distributed piecemeal in an effort to supply all customers.

There is a tremendous demand for more anthracite tonnage from all Western points, and increasing quantities of soft coal are being substituted for it in that territory. Evidence of the critical situation is seen in the fact that 90 per cent. of the Western anthracite is now going forward in open cars, whereas box-cars were formerly used almost exclusively for its transportation.

Discussion by Readers

Seasonal Mine Explosions

Letter No. 1—I notice J. W. Powell, in his article, "The Season of Explosions," *Coal Age,* Sept. 16, p. 458, says, "The winter is the period of the year when we are likely to frequently hear of mine explosions." While I believe that this is the generally accepted view in mining circles, I doubt very much whether a true record of mine explosions would show this to be the case.

As the winter season is now approaching, I believe it would be both interesting and instructive if *Coal Age* would publish a list of mine explosions both small and great that have occurred during the last 35 or 40 years, giving the date of the explosion and, as far as possible, the cause and the number of men killed.

Mr. Powell attributes the causes of explosions chiefly to blunders and oversights, or to problems presented by new and unsolved conditions. I think he is right in this respect, but he gives no idea as to what those new conditions might be, or whether they are more prevalent in one season than in another.

It is true that cold weather has a tendency to dry out mines. If, then, all explosions were directly attributable to dust, and if men were given to more blunders and oversights in cold weather than in warm, we might look for a greater number of explosions to occur in winter than in summer. I am of the opinion, however, that the history of explosions will show but little if any difference as to the time of year when they occur most frequently.

I believe that mines give off as much gas in one season as in another, and these new and unsolved conditions, which undoutedly exist, are not confined to any particular season of the year.

JOHN ROSE.

Dayton, Tenn.

Certification of Mine Foremen

Letter No. 10—I was much impressed with the argument advanced by the writer of Letter No. 1, *Coal Age,* Aug. 12, p. 276—a certified foreman—who asks, "If the person so appointed by a coal company to take charge of its mine is fully competent and his appointment is not owing to inside influence, why should he not be able and willing to take the state examination and receive the indorsement of the state board of examiners as to his competency to fill the position?" The question suggests the answer that the person so appointed is not, in truth, "equally competent" with the man who has passed the examination and been certified by the examining board.

The natural conclusion is that when a mine foreman is appointed, not by reason of his competency to fill the position but through the favor of the companies who employ him, he will without doubt act wholly in their interests. As a result, the miners will receive less consideration, and the foreman's incompetence, which may be assumed, will often expose them to danger.

There can hardly be a question that if a candidate for mine foremanship is really competent, he will not hesitate to take the examination and get his certificate. As a student of mining, I want to say that if there were such a law in Illinois, it would not keep me from studying. The man who does not study is little better than the average miner and not fit to fill the position of foreman. If the company has a preference for one of its workers and wishes to appoint him to take charge of its mine, the proper way for it to do is to urge him to study and fit himself for the duties of that position. It will make him the better foreman. Instead of authorizing the appointment of uncertified men as foremen, in my opinion it would be better if every mine foreman was reexamined each six months or a year, so as to keep them studying and prevent their falling back to a state of incompetency after their appointment.

Peru, Ill. GASTON LIBIEZ.

Shock to Motorman

Letter No. 2—I was greatly interested in the account given in *Coal Age,* Oct. 28, p. 726, by "Motorman No. 2," stating his experience in the operation of a cable-and-reel locomotive, when he received a shock in reaching blindly for the switch while changing from the cable to the pole without stopping the locomotive.

Many things like this are done by a motorman when gathering cars. I have been operating a gathering locomotive off and on for five years, and I find that it is often necessary to take many chances in respect to safety, in order to do the work expected in gathering the cars for the trip out of the mine. I recall an instance where the places were turned to the rise and the track had a slight fall out of the rooms. To gain time I would allow the locomotive to coast from one room to the other and make the change from the cable to the pole while running. It would happen at times that my cap lamp would be extinguished in the rush of air, and the change would have to be made in the dark. At such a time one is liable to get a shock in reaching for the switch. I have frequently been shocked in this way by a 250-volt circuit. The result would probably have been fatal had a 500-volt circuit been used.

I also read with great interest the explanation given by Graham Bright in answer to the inquiry on this subject (*Coal Age,* Oct. 7, p. 613) and quite agree with him that when the motor is equipped with a switch that cuts the current off of one pole before turning it on to the other it would be impossible to get the shock; but all motors are not so arranged.

For instance, I am operating a gathering-motor that has a cable reel and two trolley poles. When not in use each pole can be isolated by pulling out a plug. It has happened, more than once, that I and others have been shocked in getting on or off the motor because, in changing poles, this plug has not been pulled out and the pole that was down was yet alive. Of course this is the motorman's own fault in forgetting to pull the plug; but, in the hurry and rush of gathering the cars

for the trip, one is likely to overlook this, with the result that someone is shocked or electrocuted when coming in contact with the pole or motor frame. A gathering motorman works at a disadvantage, in this respect, because he must think of many things in the fraction of a minute, and he is blamed if the trip has to wait for cars.

Few agents of manufacturing concerns understand fully the conditions surrounding the work of the man who must operate the machine they put in the mine. In addition to this many a gathering locomotive has gone to the shop for temporary repairs, which have been made by incompetent men who do things that would not be indorsed by the manufacturers of the machine. As a consequence, the motorman in charge of such a motor is not safeguarded as when operating a perfect machine. If the locomotive will pull coal, however, this risk is largely disregarded, and the motorman is compelled to take his chances.

Having worked on several different types of motors—Goodman, Morgan-Gardner, General Electric and Jeffrey—I have found that any of these will "bite" after being used for a time in the mine. I believe that it is not too much to say that many of these machines would not be recognized by their manufacturers, after a single year of service. I freely admit that where a machine is properly used it is practically impossible for a motorman to receive a harmful shock in its operation.

Herrin, Ill. OSTEL BULLOCK.

Shortage of Labor in Mining

Letter No. 10—I quite agree with the idea that there is a growing scarcity of labor in the coal mines of this country. I believe there are several reasons for this shortage. Briefly, they are as follows:

The European War has caused immigration to the United States to practically cease, as far as coal mining is concerned. I believe this industry has been harder hit than any other, because of the increased employment of foreign labor in the mines, in recent years.

Another reason for the shortage of labor in mining is to be found in the high wages paid by the manufacturers of munitions of war. Owing to the increased demand for these products, steel works in particular have drawn large numbers of miners and mine laborers away from the mines. The effect of this latter cause may prove of shorter duration than that of the former, because it cannot be expected that immigration to this country will be again renewed to any great extent at the close of the war. Labor will then be in demand in those countries for the work of reconstruction, and this demand will be all the greater because of the decimation of that class of workers by the war.

Referring to the situation in our mines, permit me to say that where the working conditions in a mine are naturally good, the mine well ventilated and drained, and the work not delayed by a scarcity of cars, the state of the market, local strikes or other causes, we do not hear much complaint in regard to the shortage of labor, even at this time.

On the other hand, in the working of low coal in a poorly ventilated mine, and when the coal is of inferior quality, requiring the separation of refuse in loading the cars, these and other circumstances such as poor drainage, bad equipment and markets that frequently throw the mine idle and reduce the earning capacity of the miners, it is not to be wondered that difficulty is experienced in holding the men and maintaining the output of the mine.

The claim of John Bohn, *Coal Age*, Aug. 26, p. 360, that the treatment the men receive from the foreman has much to do with holding them in the mine, is true to an extent. However, I believe there are circumstances for which the foreman is not responsible and which would puzzle the best men in charge of our mines to overcome. It goes without saying that a mine foreman must treat all his men alike and see that they are provided promptly with what material is needed for the safe working of their places. Only then can they be expected to make reasonable wages, under any conditions.

Working Good and Bad Places in a Mine

In regard to Mr. Bohn's reference to the unfairness of keeping one man in a good place, and another man in a bad place all the time, my experience is that some men will not consent to work a bad place under any consideration, while others will be willing to work a bad place for a reasonable compensation. I fail to understand how the trading of good and bad places can be accomplished. Again, it is not every seam that has 5 ft. of coal on one side or in one section of the mine and 2 ft. in another part of the workings.

Of course, it is true that if a mine foreman comes to the shaft in the morning with a "chip on his shoulder," it will be reasonably certain that nearly every man with whom he comes in contact will have the same. But, a smiling and hearty "Good morning" will generally bring a like response and brighten the darkness of the mine for every toiler. The successful foreman will generally feel that his men are human beings like himself and recognize the fact that, in many instances, they are as well educated and treat them accordingly.

The social life in a mining camp has much to do with providing a good class of miners and holding them. This class of miner wants a place where he can send his children to good schools and where there is a good church and some places of recreation and amusement. The better class of mine worker does not favor the presence of a saloon in the town. It is true that the miner is a migratory bird, but he knows and appreciates a good feeding ground and a good roosting place, and is apt to abide there indefinitely. E. E. F.

Spangler, Penn.

Waste of Material in Mines

Letter No. 10—All mines, in my recollection, have been exceedingly wasteful of material. However, while sheer waste underground cannot be pardoned, there is, nevertheless, some excuse for much that takes place. While it is true that when a section of a mine is to be abandoned all material that can be used again should at once be removed, every practical mining man knows that under the conditions generally prevailing there are few men who can be spared for this work of recovery.

As suggested by the writer of Letter No. 9, *Coal Age*, Oct. 14, p. 651, the real responsibility for this waste rests often with the men higher up rather than with the mine foreman, whose time and efforts must be almost wholly

devoted to getting out the coal. Though wrong in principle, it is nevertheless a fact that when rails or other material are needed there are few men at hand that can be sent to an abandoned place to get these supplies.

Good mine management will require that it should be made the business of certain men to gather up and store all waste material at points where it will be convenient when required for use. This will leave the men regularly employed on other work undisturbed. As everyone knows, there is scarcely a day passes in the operation of a mine but certain work is required that is necessary and which demands immediate attention if the output of coal is to be maintained.

The rule that necessary work must always take precedence over that of recovering material in abandoned places applies to idle days as well. Consequently, unless it is recognized that the collection of old material must be done by extra men, efforts in the saving of such material are likely to be spasmodic. In most mines the instructions to the mine foreman are to keep working expenses down to the lowest limit, which makes the work of gathering old material seem hardly justified to many foremen. This may be styled an attitude of indifference, but it is natural.

Stop Waste on the Surface

Speaking of mine waste in general, at many mines there is a large amount of material thrown aside and wasted on the surface. It is no encouragement to a mine foreman to avoid the waste of material underground when, on coming to the surface, he sees the same signs of waste there. The darkness underground covers a multitude of sins, but waste on the surface is clearly in evidence. At every turn there appears an old pulley, a rusted coil of rope, an abandoned cage, or a pile of mine cars needing repair.

In the supply yards is seen much old timber that has been allowed to rot, rusted rails, boards and other material that should have been stored where it would be preserved in condition for use. To the right and left of the door of almost every shop are junk piles of wasted material. It is not uncommon to find a small haulage engine or pump where it has been set out and exposed to the weather. Indeed, everything of use in and about the mine may be found in a more or less dilapidated condition on the surface at many mines, making a scene of general confusion and untidiness.

This is no exaggerated picture. There are such collieries all over the country, and when these conditions exist on the surface, what can be expected of the men responsible for the work underground? If the mine foreman is expected to avoid waste of material sent into the mine, the example must be set for him by those in charge of material upon the surface.

From this brief review of conditions at many mines it is clear there is a sociological side to the question of waste in mines. Example goes farther than precept, and where conservation of material is practiced in every department of the surface work the effect will soon be seen underground, and the result will be a greater efficiency developed in every man on the job.

Let me suggest therefore that the first step to be taken in avoiding waste in the mines is the setting of a good example by maintaining at least a tidy appearance of everything on the surface, where the effect is plainly visible. Only by this means can it be hoped to overcome untidy and wasteful methods underground, where it is thought they will not be observed. J. F. K. Brown.

Sydney, N. S.

Detecting Gas by Smell

Letter No. 20—Having had considerable experience with the gases commonly found in coal mines, and having experimented along this line many times when alone in the mine, and knowing that the quantity of gas accumulated was small, I want to say that I have never yet been able to detect an actual smell or odor where gas was present.

In some instances, however, I have experienced a peculiar effect that I thought the gas produced on the tissues of the throat and nostrils. In all the letters that I have read no one has been able to describe the smell he claims to have detected and, for this reason, I believe that the sensation ascribed to smell is the effect of the action of the gas on the throat and nostrils. If there was a smell we would be able to describe it as being like some other odor.

Many times I have detected the presence of gas in the mine without my lamp. I remember on one occasion walking into a body of gas while firebossing in a mine. I was not aware of the presence of the gas until my lamp suddenly flamed and went out, at a point 200 ft. from the head of the entry. I had not smelled the gas, nor had I expected to find gas before passing the last crosscut. On other occasions in the same mine I have detected the presence of gas by its effect, before making a test with my lamp.

At the time of the Hillcrest explosion, in Alberta, I was among the rescuers that entered the mine 15 min. after the explosion. We proceeded along the tunnel to a point where the intake air crossed the head of a slope. Here we felt the first effects of the afterdamp and, although we could not get a cap on the lamp, one of the men was overcome at that point.

In the same mine, about 10 days later, another fireboss and myself were sent to remove a large body of gas that had accumulated in a chute that was 14 ft. high and 16 ft. wide. The gas filled the chute to a point about 40 ft. back from the face. In this instance also I was unable to smell the gas, and did not feel any of its effects until I was nearly overcome when nailing the brattice up near the roof.

All mining textbooks teach that none of the gases commonly met with in coal mines have any odor except hydrogen sulphide. In the mine there is always the difficulty of determining whether the gas present is pure methane or whether there are other gases present and, for this reason, it is not certain that it is possible to detect marsh gas by the smell. G. W. H.

Delia, Alta., Canada.

Letter No. 21—If not too late, permit me to reply to a few points brought out in the letter of W. L. Morgan, *Coal Age*, Oct. 14, p. 652, describing the conditions existing in a South Wales mine.

Mr Morgan claims that the smell ascribed to gas in South Wales mines is the same that can be detected in the anthracite district or the central coal field in this country. He describes it as "an acrid smell somewhat

similar to that of artificial gas but not nearly so strong." I want to say that, in this respect, the mines of this country are not to be compared with those in England or Wales, where the coal seams worked lie at an average depth of 1,600 ft. below the surface.

In those deep mines the air current must frequently travel from 1½ to 2 mi., from the bottom of the downcast shaft, before reaching the first working place. In this distance the air current passes over a large surface of coal, and much of the oxygen of the air is absorbed by the pores of the coal. As a result, the air reaching the working places with a low oxygen content and containing other gases absorbed in its passage through the mine, would very naturally possess a certain odor. This odor is more perceptible at the face of a longwall brushing and in places where the ventilation is slack or where falls have occurred in the irregularities of the seam. But, inasmuch as we are taught that pure marsh gas has no smell, it is not reasonable to ascribe the odor to the presence of this gas under these conditions.

Practice in Gaseous Mines in Wales

Having, myself, served in an official capacity in the district described by Mr. Morgan, and having known personally many of His Majesty's inspectors of mines in that district, I can say that when a ½-in. cap was discovered on the return side of a district or in any part of the return airway, the inspector would stop work in that section of the mine. I cannot understand how the South Wales mines would be permitted to operate when the return air showed a ⅝-in. cap, as described by Mr. Morgan. This is a mystery involving, perhaps, the "sixth sense" suggested by him.

As far as I have observed, His Majesty's coal-mine inspectors live up to the requirements of the Coal Mines Regulation Act. I cannot believe that they would allow the operation of a mine under the conditions to which I have referred, as it would be a direct violation of the mining laws of that country. I am now employed as mine examiner (fireboss) in this state, and have performed the same service in mines in other states, but have never yet been able to discover gas by its smell.

Owing to the different conditions existing in the mines of this country, as compared to those existing in the mines of England and Wales, I do not believe that there is the same opportunity here to detect a smell that could be ascribed to the presence of gas, as the coal seams here lie generally at a less depth from the surface and the mines are less extensive than in the old country.

Springfield, Ill. James M. Rody.

[This letter will close the discussion of this subject—Editor.]

Use of the Siphon in Mines

Letter No. 1—I have been much interested in the several letters published in *Coal Age* in regard to the siphon in coal mining. In one of these letters, I remember the writer used three valves to operate the siphon he describes.

In this connection the following incident may be of interest, as showing the use that can be made of a simple siphon for draining rooms in pitching seams where the seam is faulted and a dip occurs at the head of the pitch. Such was the case in a mine where I was employed.

There were seven places driven to the rise of the gangway, and I was working No. 4, which unfortunately was somewhat lower than the other places and took all the drainage from them. These places had a pitch of 12 deg. for about 125 ft., where a fault made it necessary to drive 70 or 80 ft. on a dip of about 6 or 8 deg. to catch the seam again, which pitched then almost as steeply as before.

In driving my place I kept the road on the high side. In order to drain the water that collected at the foot of the short dip, I laid a pipe from that point over the rise and extended it down the pitch to the gangway. There was a valve on the discharge end of the pipe at the gangway and another at the head of the pitch, the last valve being provided with a nipple that permitted the pipe to be filled at this point by the use of a funnel. I made a sump at the foot of the dip and submerged the suction end of the pipe in the water that collected there.

When starting the siphon, after filling the pipe with water at the crown and closing that valve, I sent my laborer to open the discharge valve on the gangway the moment I signaled to him that I was ready. Then I pulled the plug in the suction end of the pipe and the water started to flow, draining the place. When filling the pipe I carried the water from the sump in a powder keg that I kept for the purpose, and when the water was running I would examine carefully for any holes, by passing my lamp along close to the pipe. If there were any holes that were sucking air, I would close them with mining soap, so as to prevent the siphon from emptying itself, which it would do if there were any leaks. Where gas was present a safety lamp must be used to examine the pipe, and soapsuds put on the pipe will show any leaks.

Never siphon all the water from the sump, but shut the discharge valve on the gangway, as soon as the level of the water has been sufficiently lowered. The discharge valve should be shut first, and a few seconds later the plug should be driven in the suction end. By doing this, it will not be necessary to refill the pipe each time that the sump must be drained. C. E. H.

Plymouth, Penn.

Letter No. 2—Having had five years' experience in the use of siphons in coal mines, I would like to give my opinion in regard to this method of draining certain portions of the mine and offer a few suggestions that may prove of some help to others.

A siphon should only be installed where the conditions are suitable for it to work. These conditions have been fully explained at different times in *Coal Age*. In laying a siphon use only new pipes. Keep the line as straight as possible and avoid any sharp bends that are unnecessary. Make all joints in the pipe water- and airtight by smearing them with tar when putting the pipe together. Leaky joints are often caused by a slight damage to the thread.

Where a 2-in. pipe is used on the suction end, I have found it of great advantage to employ a smaller size, say a 1½-in. pipe, for a distance of from 100 to 300 ft. on the discharge end, this length varying with the total length of the siphon line.

There is nothing better than a simple handpump for the purpose of priming a siphon. A handpump that costs

about $30 will soon pay for itself by the time saved in filling the pipe. The pump should be placed within easy reach of the sump or supply basin, and a gate valve should be placed in the pipe leading from the pump to the summit of the siphon, so that the water will not be required to pass through the pump valves when the siphon is working.

In this arrangement the feed line, by which the pump supplies water to the crown of the siphon, is a separate pipe and forms with the suction pipe of the siphon a double line from the sump to the crown or summit. A foot valve should be placed in the suction end of the siphon to prevent the water from running out of the pipe into the sump when priming. This and the gate valve are the only two valves necessary in this arrangement. The gate valve should be closed as soon as the pipe line is full and starts to draw.

When the pipe line has been in use long enough, it will generally develop small leaks at different places, owing to the corrosive action of the mine water, which eats away the iron when the water contains sulphur. A simple way to detect these leaks when very small is to plug the discharge end of the pipe so that no water can flow out at that end. Then let someone operate the handpump, and the pressure will force the water out through any leaks in a tiny stream that is quickly observed.

Small leaks will not be readily found by the usual method of listening along the line while the siphon is working. When the leak is larger it can be located by a slight hissing sound at a point where the pipe is sucking air. After a leak is located it should be promptly stopped by covering the pipe with a cloth smeared with tar and binding it tightly around the pipe with a small cord. It is possible, by stopping the leaks in this manner, to get double service out of an old pipe, before it must be replaced. At times a patch of gum bound tightly about the pipe with a clamp made out of strap iron will prove economical. W. R. J.

Ohio Pyle, Penn.

Gathering-Motor Haulage

Letter No. 6—Motor haulage in coal mining, in my opinion, cannot be excelled. I do not think that any comparison can be made between motor and mule haulage. It seems to me that the day of the mine mule ceased with the day of small tonnages.

For instance, under ordinary conditions in the mine, one 6-ton gathering motor, hauling coal from the faces of the rooms, will handle from eighty to ninety 2½-ton cars, where the average haul does not exceed 2,000 ft.; and, under fairly good conditions in the workings of the mine, this amount will often be increased to 100 or even 125 cars in a day of 10 hours.

Compare these results in motor haulage with the work done where mules are employed to distribute the empties and gather the cars for the outgoing trip. Taking the lowest estimate of 80 cars hauled by a motor a distance of 2,000 ft. when an equal number of empties is returned the same distance in, say 10 hr., and assuming the weight of an empty car to be 1½ tons, and the actual time of haulage 8 hr., so as to make due allowance for changing cars and delays, the work of the motor is practically 20 ton-miles per hour, while the work of a good mine mule will hardly equal a third of this amount, in a level seam.

Figures gathered from a number of years of actual experience in hauling coal in a 5½-ft. seam lying practically level show that a good two-mule team, with an efficient driver and a helper, will handle from 50 to 60 cars in a day of 10 hr., where the haul does not exceed 2,000 ft., which would equal about 7 ton-miles, per mule, per hour, making the same allowances for delays, weight of empty cars returned and time lost in changing trips.

In working seams 3½ or 4 ft. in thickness, the work of a motor will not be materially decreased, but mules will hardly be able to haul more than one-third of the number of cars handled in thicker seams. I have known the cost of producing coal to be increased as much as 3c. per ton, because of the need of brushing the roof or lifting bottom on the roads to make the required headroom for a 50-in. mule in a 4-ft. seam.

The usual height of a gathering motor does not exceed 37 in. above the rail, and no brushing or shooting of bottom is therefore required in motor haulage where steel ties are used, unless the height of the seam is less than 3½ ft. I refer now to the type of locomotive carrying a single electric cable reel.

Where large cars are used, it is hardly necessary to refer to the crab type of locomotive unless the rooms dip badly, in which case it is well to have a combination type carrying both the cable and the crab reel. The crab can then be used to pull cars from the dip places, as it will take less power to do this and there will not be the danger of injuring the cable by too high a current.

I fail to see any reason in an argument favoring mixed haulage, especially in a machine mine, where the mules are liable to come in contact with live wires or stray currents on the bottom, particularly as one locomotive will do the work of three mules and their drivers.

Where a large amount of development work is being done, motor haulage is ideal. I call to mind an instance where one 6-ton gathering motor is doing the work of distributing 60 cars to the face of 14 entries, none of which are less than 500 ft. off the main entry. The coal in that mine is less than 4 ft. in height, and the grades of the roads range from 5 to 17 per cent. The employment of mules would be out of the question in such a case.

Reference has been made to the storage-battery locomotive as being yet in the experimental stage, but I want to say that if this is true, these machines will undoubtedly prove a great success in a short time. I know of some locomotives of this type that have been in use for more than a year and have given so great satisfaction that neither the mine foremen nor the motormen would care to have them replaced by machines of another type.

In closing permit me to say that, in my opinion, an ideal mine haulage is one using a 10-ton haulage motor and 45-lb. rails on the main roads, and a 6-ton gathering motor with 23-lb. rails on the other roads and in the rooms. I cannot forbear citing one instance of a mine that shipped 35,000 tons of coal in the month of September, 1916, and the cost for haulage underground was less than 5c. per ton. In this mine not a mule was employed, but a motor performed the entire work of hauling the cars from the face to the tipple and returning the empties.

Stotesbury, W. Va. J. E. Virgin, Jr.

Inquiries of General Interest

Water-Gage Readings in Fan Ventilation

Kindly permit me to draw attention to a statement made in the reply to an examination question relating to fans, *Coal Age*, Oct. 14, p. 654. In explaining why the term "manometric efficiency" is of no practical value in comparing different fans, the statement is made that "the pressure a fan will create at a given speed is determined by the resistance of the mine or airway and is not a function of the tip speed of the fan alone."

For some time past I have been puzzled as to what water-gage readings really mean. We have been accustomed to calculating the water gage a given fan will produce at a fixed speed by means of the formula

$$w.g. = \frac{0.076u^2}{5.2g}$$

in which u = velocity of blade tips of fan (ft. per sec.), and g = force of gravity (32.16 ft. per sec. at sea level). The constants 0.076 and 5.2 represent, respectively, the weight of air (lb. per cu.ft.), under normal conditions, and the pressure (lb. per sq.ft.) due to 1 in. of water gage.

When speaking of water-gage readings, should it not be stated where the gage was taken, whether on the fan drift close to the fan when one end of the gage is open to the fan drift and the other to the atmosphere, or in the mine between the main intake and the main return airways, when one end of the gage is open to the intake and the other to the return airway? In the first case the reading of the gage would represent the difference between the atmospheric pressure and the pressure on the air in the fan drift; while in the second case the reading would represent the frictional resistance of the mine airways.

This question has recently caused much discussion; and a practical test was made in a mine in this section, by short-circuiting the air at the shaft bottom. On the one hand the disputants claim that, ignoring the slight variations due to the varying density of the air at different seasons of the year, the same speed of the fan will produce the same water gage whether the air is passing through the mine or is short-circuited at the foot of the shaft. This claim was disputed by others who asked, "Why then is it necessary to speed up a fan as a mine is developed and the airways lengthened?" They claim that it is necessary to increase the speed of the fan to produce the same water gage under those conditions.

Another phase of the question is presented by these same doubters, who argue that the pressure, or water gage, as calculated by the formula

$$w.g. = \frac{ksQ^2}{5.2a^3}$$

is the pressure caused by the frictional resistance of the airway to the passage of the current, which is of course true. Then, say they, "When a fan is exhausting and the water gage produced is continuously reduced by the resistance of the airways, is it not possible to increase the distance the air must travel, so as to completely absorb the pressure created by the fan? In that case the pressure, or water gage, would decrease with the length of airway, instead of increasing as before. If such a limit is possible, what would be the effect on a governed fan running at a constant speed? What pressure, or water gage, would be produced?"

The first formula would indicate that the tip speed of the fan is a function of the water gage produced, for the same density of the air revolved in the fan. If this is true, I fail to see how the statement to which I have referred can be correct.

Wilkes-Barre, Penn. C. H. BEIDENMILLER.

It is very easy to confuse the relation of a centrifugal fan to the mine in which it operates, in respect to the pressure or water gage produced. It will not be possible to make an elaborate explanation of all the questions asked, in the limited space on this page. The first formula given by our correspondent expresses the theoretical water gage that a given fan can create at a certain speed. This theoretical gage is generally found to be practically double the maximum possible gage for that speed, since the manometrical efficiency suggested by Murgue will rarely, if ever, exceed 50 per cent., as he states.

Whether this pressure can develop, however, will depend wholly on the resisting power of the mine or airway. In other words, the mine resistance produces what the fan creates. The one is dependent on the other, and the result depends alike on both—the pressure the fan can create and the ability of the mine to resist.

The condition affecting the pressure, or water gage, that can be produced in the operation of a centrifugal fan will be more clearly understood by supposing the fan drift leading to the mine to be suddenly opened wide to the atmosphere. It is evident that the water gage would at once drop to zero, there being no resistance ahead of the current to produce the pressure. In the same way it would be impossible to get a gage reading on the side of the chimney of an exhaust fan where the air is discharged into the atmosphere.

The gage producing circulation must always be taken on the fan drift, between the fan that creates and the mine that produces it by the resistance offered to the passing current. Every mine or airway of given dimensions possesses a certain resisting power, which is only developed when an air current created by the action of the fan is passing through the airways. This is a *potential* resistance and has given rise to the use of the term, "mine potential." Any formula that pretends to represent the actual water gage produced by a fan operating on a mine is incomplete unless it expresses the possible resisting power of the mine or the mine potential. We will continue the answer to this inquiry in the next issue.

Examination Questions

Miscellaneous Questions

(*Answered by Request*)

Ques.—The quantity of air passing at the bottom of a shaft is 140,000 cu.ft. per min. This current divides into three splits as follows:

Split A, 6 × 9 ft., 9,000 ft. long,
Split B, 6 × 9 ft., 12,000 ft. long,
Split C, 6 × 8 ft., 6,500 ft. long.

Find the natural division of this current of air.

Ans.—The sectional area and perimeter of the several splits are as follows:

A. $a = 6 \times 9 = 54$ *sq.ft.*; $o = 2(6 + 9) = 30$ *ft.*
B. $a = 6 \times 9 = 54$ *sq.ft.*; $o = 2(6 + 9) = 30$ *ft.*
C. $a = 6 \times 8 = 48$ *sq.ft.*; $o = 2(6 + 8) = 28$ *ft.*

The work is much simplified by finding the relative potential for each split, by reducing the values for the sectional area, perimeter and length to their lowest relative terms by canceling any factor common to all, in each case, which gives the following:

A, $a = 9$; $o = 15$; $l = 18$
B, $a = 9$; $o = 15$; $l = 24$
C, $a = 8$; $o = 14$; $l = 13$

The relative potentials for the several splits are then found by substituting these values in the formula for the pressure potential, as follows:

A, $X_a = a\sqrt{\frac{a}{lo}} = 9\sqrt{\frac{9}{18 \times 15}} = \frac{9}{\sqrt{30}} = 1.643$

B, $X_b = 9\sqrt{\frac{9}{24 \times 15}} = \frac{9}{\sqrt{40}} = 1.423$

C, $X_c = 8\sqrt{\frac{8}{13 \times 14}} = \frac{16}{\sqrt{91}} = 1.677$

Sum of relative potentials..... 4.743

The quantity passing in each split is then found as follows:

A, $q_a = \frac{1.643}{4.743} \times 140{,}000 = 48{,}500$ *cu.ft. per min.*

B, $q_b = \frac{1.423}{4.743} \times 140{,}000 = 42{,}000$ *cu.ft. per min.*

C, $q_c = \frac{1.677}{4.743} \times 140{,}000 = 49{,}500$ *cu.ft. per min.*

Total quantity..... 140,000 *cu.ft. per min.*

Ques.—Find the horsepower required to raise, in 3 min., a car weighing 1 ton and containing 1 ton of material, up an inclined plane 1,000 ft. long and pitching 30 deg., if the rope weighs 1,500 lb.

Ans.—The total weight resting on the incline when the car is at the bottom of the plane is 2 × 2,000 + 1,500 = 5,500 lb. Then, since the sine and cosine of 30 deg. are 0.5 and 0.866, respectively, and assuming the coefficient of rolling friction to be one-fortieth of the normal pressure on the plane, the total pull on the rope at the top when the car is at the foot of the incline is, $P = 5{,}500(0.5 + 0.866 \div 40) = 2{,}869$ lb.

If this load is to be hoisted in 3 min., it will be necessary to allow, say 15 sec. as the time lost in starting and stopping the trip, making the equivalent time of hoisting at full speed 2.75 min. Then, since the length of the plane is 1,000 ft., the horsepower required will be

$$H = \frac{2{,}869 \times 1{,}000}{2.75 \times 33{,}000} = 31.6\ hp.$$

Assuming the hoisting engine has an efficiency of, say 80 per cent., the rated horsepower of the engine will be practically 31.6 ÷ 0.80 = say 40 hp.

Ques.—What precautions would you take in the management of a dry and dusty mine generating explosive gas, with reference to the protection of life and property?

Ans.—First, inaugurate a thorough system of inspection by competent firebosses, giving to each a limited area or section, for the conditions in which he will be held responsible. See that the examination is made within three hours previous to the time for the men to enter the mine for work. As mine foreman, examine the report made by each fireboss, noting carefully the dangers reported. Sign each report and arrange for the prompt removal of the dangers as far as this is practicable. Require each fireboss to remove the checks of the men from the board when reporting their places as dangerous for work. Hold these checks and permit no man to enter the mine without first receiving or taking his check from the board.

Require that each fireboss when making his second round shall examine carefully the condition of each place in his district, give any necessary instruction to the men in regard to timbering their place or mining their coal and see that his instructions are obeyed.

Allow no one to enter the mine with an open light, except drivers or motormen working on the main intake airway, pulling the coal from the inside parting to the shaft bottom. Use only an approved type of safety lamp and see that these are properly cleaned, trimmed and filled before they are given to the men. Make each miner responsible for his own lamp in the mine, and see that he thoroughly understands its use.

Give particular attention to the ventilation of the mine and see that the air is carried forward and made to sweep every working place. Also see that all void and abandoned places are properly ventilated, so as to prevent the accumulation of gas therein. Where electricity is employed see that the system is properly installed by a competent electrician. Permit no accumulations of fine coal or dust at the working faces or on the roads, which should be cleaned regularly.

Where blasting is performed, permissible powders should be used if this is possible. All shots should be fired by competent shotfirers after the men have left the mine. An electric system of firing should be employed in preference to the use of either fuse or squibs. A good sprinkling system should be installed throughout the mine and the working places and haulageroads thoroughly sprinkled wherever this is necessary.

Coal and Coke News

Washington, D. C.

Formal investigation of the present car shortage was started by the Interstate Commerce Commission on Wednesday, Nov. 8 last. This investigation, it is anticipated, will be continued at various industrial points throughout the country. According to many of the complaints already placed before the Commission one of the prime difficulties arising is due to the congestion of export freight. Freight cars loaded with coal and other commodities are being shipped without adequate prior preparation for ocean transportation. It often follows that these loaded cars are detained at the ports for indefinite periods thereby tying up the railroad equipment. Coal bears an important relation to this situation inasmuch as the United States is at present exporting more coal than ever before in its history.

Every conceivable kind of ocean-going vessel has been utilized in transporting coal to foreign countries. It goes not only to South America but also to Europe. This sudden foreign demand for American coal is unprecedented. It has caused the shipping to the coast ports of large numbers of loaded coal cars and failure to provide adequate ocean transportation has resulted in diminishing the available coal car equipment of the railroads.

The Commission has determined to give this matter a thorough investigation and to enter appropriate orders in the hope of affording adequate relief. Already some of the railroads have undertaken to take steps to relieve the situation. They have proposed to shorten the "free" time at the ports and have sought to increase the charges on cars held for the storage of commodities.

These expedients have not provided immediate relief and it is believed that the Commission may again be compelled to resort to the expediency of organizing a committee to take active control of the export freight movement. This was resorted to once before when the port congestion became serious. After considerable labor the committee was successful in removing the port congestion to a great extent. By bringing order out of the haphazard manner in which the cars were being handled the Commission was able to send a great part of the railroad equipment back for further use. It is hoped that this may be accomplished again in the present instance.

The Interstate Commerce Commission is for personal reasons greatly interested in the coal car shortage. During the past week or so the offices of the Commission have been short of coal and have found it almost impossible to secure it. Several days the Commission was compelled to close down the elevators in its office building so that its slim supply of coal would not leave it without heat during the cold days. A similar situation has existed among a number of the office buildings of the government in this city. Several of the Government buildings have been running short of coal and they have been able to get but a day-to-day supply.

During the next week much more may be expected to be heard regarding this matter. On Nov. 20 the joint committee of Congress, the so-called Newlands committee, will begin hearings regarding the railroad question. This joint congressional investigation was planned to devise new railroad legislation, but it is anticipated that the equipment and financial side of the problem will receive immediate consideration. Unless the Interstate Commerce Commission is capable of providing the desired relief Congress will be asked to take legislative action.

It has been charged that the basic trouble is that the railroads have not enjoyed sufficient prosperity to warrant their investing further in new equipment. Financiers have pointed out that railroad extension during the past ten years and less has been decreasing at a surprising rate. They claim that not until a more liberal attitude of the public and of the Government is shown toward the railroads investors will not consent to advance further funds toward railroad buildi g. This naturally means that if the railroads need new equipment they must pay for it out of their current earnings. This is a rather expensive method of doing business and the natural growth of the country is making the curtailment felt even more severely.

Railroad authorities argue that the interstate carriers should be relieved of state interference and that they should be regulated solely by the Interstate Commerce Commission. Uniformity in regulation would relieve interstate traffic of many restrictions and make it that much easier to handle the various commodities in interstate transportation. Likewise the financing of railroads, such as the issuance of stocks and bonds, and the regulation of the expenditures of the interstate roads should be regulated by the Federal body and not interfered with by the various state bodies. In this way all sections of the country would be treated according to their merits and all commodities would be given an equal consideration.

If the coal shortage continues to increase by reason of a car shortage it is likely that Congress will be persuaded to take decided radical steps this winter. The problem is still in its initial stages for the present. The Interstate Commerce Commission has not gone far enough into the matter to afford a comprehensive idea of it. The knowledge possessed by the Commission, however, will be laid before the joint Congressional Committee without delay. It will not take Congress long to act in the matter once it has been roused to the necessity.

One of the immediate outcomes, should the shortage become critical, would be to take the transportation over under Federal jurisdiction and control, the equipment to be shifted and used according to the detailed instructions of the Federal body. At the present moment the Interstate Commerce Commission is hopeful that sufficient relief can be afforded without resort to such methods. The Commission is hoping to relieve the shortage by coöperation with the railroad managers and the coal operators.

Some Interesting Statistics

Figures for Part B of the coal report of the Geological Survey for 1915 are now in such shape that many interesting deductions can be made from them. Exact figures are withheld from the public until the publication of the report, but the following approximations are not expected to vary materially from the final figures:

The western coal district of Kentucky produced two-thirds of the state's production. More than 20 per cent. of the state's production was used within its own borders. The railroads consumed an equal amount. Something over 50 per cent. of the production was shipped by rail to other states. Kentucky coal was marketed in 25 states.

Over 30 per cent. of Alabama coal was consumed by railroads. Alabama furnishes about 20 per cent. of all coal consumed by railroads in the South. Half of Alabama's output was consumed in the state. About 15 per cent. of its output is shipped to other states. Less than 5 per cent. moved to tide water for export. The higher grades of Alabama coal are desirable for domestic fuel and were shipped in small lots to markets as distant as the Pacific coast.

Indiana consumed 40 per cent. of its own coal, while 25 per cent. was shipped to other states. Most of the remainder was consumed by the railroads. Chicago is a great market for Indiana coal and nearly all of the interstate business was with Illinois.

Colorado consumed 60 per cent. of the coal mined in that state. Considering the excellent grade of the coal mined in Colorado, Government specialists are unable to understand why it finds so small a market to the eastward. The principal consumption of Colorado coal in other states is in Kansas, Nebraska, Oklahoma and Texas. These states consume about 15 per cent. of her output. Railroads provide a market for 25 per cent. of Colorado's coal.

Wyoming's coal was marketed in 14 states. Its geographical position is mainly responsible for this result. As is the case with most Western States, the railroads are the most important consumers of Wyoming coal. In 1915 they took close to 70 per cent. of its output. Only 5 per cent. of the production was taken by the home market.

As is the case with states producnig the higher-grade coals, the Virginia product is widely distributed. Thirty-five per cent. of the quantity mined was shipped into 18 states. Thirty per cent. of Virginia's coal was used for railroad fuel. Twenty-five per cent. was used within the state and the balance was shipped to tide water.

The railroads consumed 60 per cent. of Tennessee's coal. Industries within the state consumed 20 per cent. An additional 20 per cent. was shipped to other states.

Competition offered by nearby coal fields in other states prevents the Iowa product from moving in interstate commerce in quantity. Only five per cent. of the output was shipped to other states. Railroads used 60 per cent. and industries within the state used 35 per cent.

Fifty per cent. of the Kansas production was sold to railroads. Twenty-five per cent. was consumed within the state and the balance was shipped principally to Missouri and Nebraska.

About 12,000,000 tons of bituminous coal was used for bunkering vessels at ports of the United States.

Pennsylvania supplied 85 per cent. of the coal used in the manufacture of beehive coke and 30 per cent. of that used in byproduct ovens.

Domestic fuel accounted for the consumption of 15 per cent. of the United States output of bituminous coal. General industrial purposes required 30 per cent. of the coal output. Of this amount Pennsylvania furnished 40 per cent., West Virginia, 20 per cent., Illinois, 15 per cent., and Ohio, 5 per cent.

Generating steam and producing heat at mines required about 2 per cent. of the bituminous coal mined.

The consumption of coal throughout the entire country was five tons per capita. This compares with four tons per capita in England and Germany and two tons per capita in France. In the states in the southern half of the country, the coal consumption is less than one ton per capita. Of these states California uses the least and Alabama the most. In the Chicago district of Illinois, the consumption is seven tons per capita. In Delaware the consumption was close to seven tons per capita. In New England the consumption was about five tons per capita.

Arizona consumed less coal per square mile than any other state in the Union. Pennsylvania leads the list. In the former state, less than one ton to the square mile is used; in the latter state the consumption was nearly 2,000 tons per square mile.

HARRISBURG, PENN.

Plans of the Scranton Surface Protective Association to test by court action the validity of the "cut throat waivers" in deeds issued by the coal companies during the past 25 years, have materialized to such an extent that suit is about to be brought in the United States District Court.

This action has been contemplated for some time and numerous deeds of noncitizens, containing the waiver clause have been selected. These deeds contain the clause "the company reserves the right to mine all of the coal and minerals without liability for damage to land, buildings or creatures thereon, even to the extent of destroying them."

The deed of a noncitizen will be selected because this is necessary to start action in the United States District Court. Another object of the association in starting the suit in the Federal court, is to get away from Pennsylvania courts.

With this suit in the United States District Court and various suits now pending in the lower state courts and in the Supreme Court of the state, the members of the Surface Protective Association are convinced they are handling the cave question from every possible angle. Should the Federal court declare these deeds illegal, it will be the biggest victory yet attained in the interest of surface protection.

PENNSYLVANIA

Anthracite

South Scranton—Having decided on the removal of practically every bit of coal remaining in the abandoned workings of the National colliery, the Delaware, Lackawanna & Western Railroad Co. has notified people living on Prospect and Stone Ave. and in other places to remove at once from the danger zone.

Dupont—The incorporation of the village of Dupont, including about 8 sq.mi. of Pittston Township, into a borough seems assured, as attorneys representing those favoring the incorporation have entered into an agreement with the Taxpayers Association, whereby objections of the coal companies have been removed by a change in the lines originally contemplated. The new lines for the proposed borough will include only coal lands of the Lehigh Valley Coal Co., and the Pennsylvania Coal Co.

Shenandoah—Recently a committee of the Board of City Trusts of Philadelphia, which administers the affairs of the Girard estate, inspected the Girard holdings in this vicinity with the view of making improvements to collieries and other workings, and with the probabilities of making new leases. The party was headed by former Governor Stuart.

Pottsville—The Philadelphia & Reading Coal and Iron Co. has posted notices at all its collieries that all candidates for the position of hoisting engineer must undergo a physical examination.

Work has been resumed at Lytle colliery after an idleness of two weeks due to a fire in a gangway. That portion of the mine has been walled up and it is expected that the fire will be finally extinguished by slushing culm into that section. The mine employs 1,000 men.

Weatherly—Negotiations have about been completed by New York interests for the purchase of the coal property of the Penrose estate, known as the Penn Forest Coal Co. The property is underlaid with a rich deposit of anthracite and it is understood that a large breaker will be erected here soon. The price paid for the property is supposed to be around $3,000,000.

Wilkes-Barre—The first regular monthly meeting of the local mining institute was held in the Y. M. C. A. auditorium on Nov. 11. An excellent program was given and the new officers were introduced by a former president, H. G. Davis, efficiency engineer for the Delaware, Lackawanna & Western Railroad Co. The incoming president is John H. Haertter, division superintendent of the Lehigh Valley Coal Co.

Rumors are afloat to the effect that the holdings of the Susquehanna Coal Co. may be taken over by the Lehigh Valley Coal Co. Most of the collieries and coal lands of the Susquehanna Company are so located that they could be taken over by the Lehigh Valley in such a way that mutual workings of the companies would not be affected.

Hazleton—Officials of the Lehigh Valley Coal Co. and other big concerns, recently reported that there will be no advance in the retail price of coal. They declared that the circular prices announced in September are being maintained, and there will be no deviation therefrom, so far as they know at present.

Bituminous

Derry—Five informations against miners at Derry No. 1 mine were recently filed by the district mine inspector for consideration by the Grand Jury. The men are alleged to have carried open lights into the mines. The law expressly prohibits the use of anything but flashlights or safety lamps in Pennsylvania mines where there is possibility of mine gas.

Connellsville—The production of coke in the Connellsville district was 408,000 tons for the last week, for which figures are available. This represents a decrease of 23,049 tons from the previous week's output. Shipments amounted to 397,000 tons, or a decrease of 20,798 tons. The car supply was down to 50 per cent. on four days of the week, while it was 100 per cent. on two days, making an average of about 70 per cent. Coal cars only averaged about 50 per cent.

Charleroi—What are known as the Rider, Schwab and Maxwell tracts of coal, aggregating 264 acres, and purchased by the Werner-Leonard Co., of Cleveland, Ohio, will be developed. A slope is now being opened, and a tipple will be constructed with a view to handling 2,000 tons of coal per day. Shipments will be made over the Pennsylvania R.R.

Marianna—It is said that a combination of steel companies is being planned, which will mean the development of large coal deposits in Washington and Green Counties. The plan for the merger of the independent companies is about as follows: The Lackawanna Steel Co., of Buffalo, N. Y., the Youngstown Sheet and Tube Co., of Youngstown, Ohio, the Sloss-Sheffield Steel and Iron Co., of Alabama, and the Inland Steel Co., of Chicago, will form a holding corporation. The Ellsworth Collieries Co. and the Pittsburgh Coal Co. will also be absorbed or become part of the combine. Surveyors of four railroads are now at work on proposed routes. These are the Pennsylvania, Baltimore & Ohio, Western Maryland, and an independent line known as the Wheeling & Eastern. The proposed routes traverse all parts of Green County.

Johnstown—It was recently stated that the entire output of the Marianna mine in Washington County, recently acquired by the Midvale Steel and Ordnance Co., would be consumed by the Midvale company. The coal will be shipped direct from the mines to the mills in most cases, being made into coke in byproduct plants. The 160 coke ovens at the Marianna mine will be employed to produce some of the coke, but this will only be a fraction of the output of the mine which is expected to reach 5,000 tons in a short time.

Carrolltown—It is expected that negotiations will be begun for the purchase of the old Logan No. 5 mine. It is said that if the deal is consummated the plant will be improved and operated on a large scale. The mine is conveniently located, and is said to contain some rich coal.

Monongahela—So great is the demand for coal that coal operators in Washington and Greene Counties are offering miners a bonus for working without a layoff. The system already is in operation and has resulted in a marked increase in the output. The Crucible company, at Rice's Landing, Greene County, is paying miners who work 12 days in succession $3 in addition to the regular scale. Other companies are giving approximately the same bonus through the fifth and sixth pools and some in the fourth.

WEST VIRGINIA

Elk Garden—The Davis Coal and Coke Co. recently purchased the Jacobs-Sullenbarger coal tract, which, with the Bray coal adjoining, will give two or three years' work. The tramway will be extended, and the dump will be located at the old No. 3 mine.

Bluefield—The Appalachian Power Co. recently closed large contracts with coal companies in Southwest Virginia, and will start immediately the construction of a 30-mi. line from Saltville, Va., to Dante, Va. The power company has purchased the steam plant of the Clinchfield Coal Corp., one of the companies to which it will supply power. It will equip this plant as a reserve to be used in emergencies.

Amigo—The Amigo Coal Co. has in use a specially constructed mine car. This car dumps in a manner similar to railroad cars at the ocean piers and is so built as not to scatter coal about the mine.

Omar—The Main Island Creek Coal Co. has ordered 17 Jeffrey mine locomotives of various sizes for its mines here.

Widen—The mines of the Elk River Coal and Lumber Co. are running full time with a fairly satisfactory car supply. A class in domestic science has just been organized under the direction of Miss Watson, of the Clay County High School.

Highcoal—Work on the plant and town of the Anchor Coal Co. is moving along rapidly. It is stated that before long this will be a better-than-ever mining camp.

ALABAMA

Marvel—Chief State Mine Inspector Nesbitt recently consented to the opening of Marvel mines where a gas explosion occurred Oct. 22 in which 18 lives were lost.

Birmingham—B. M. Starnes, manager of the safety department of the Sloss-Sheffield Steel and Iron Co., is organizing a local chapter of the National Safety Council, and the following industrial companies have signified their intention of becoming charter members: American Cast Iron Pipe Co., Semet-Solvay Co., Alabama Safety Association, Sloss-Sheffield Steel and Iron Co., Alabama Power Co., Kaul Lumber Co., Republic Iron and Steel Co., Tennessee Coal, Iron and Railroad Co., American Cast Iron Pipe and Foundry Co., Woodward Iron Co., U. S. Cast Iron Pipe and Foundry Co., American Steel and Wire Co., Bonnyman & Norman Coal Co., Pratt Consolidated Coal Co., McCrossin Engineering Co., Bessemer Foundry and Machinery Co., Bessemer Coal, Iron and Land Co. This list will be supplemented by probably fifty others. The Chamber of Commerce is making an active fight to have the next convention of the National Safety Council meet in Birmingham, and will be represented at the meeting of the executive committee of the council Nov. 21, when the next meeting place will be selected.

KENTUCKY

LaViers, Ky.—(P. O. Seco). It is said that mining work is to be started shortly at the South East Coal Co.'s new operation at LaViers. The first shipments are to go to the Great Lake regions and will be made within the next few days.

Hamdon, Ky.—(P. O. Jeff). The Kenmont Coal Co. starting a coal development here has begun on the erection of 100 miners' houses which are to be completed in a short time. The work will be rushed. Coal mining is billed to start within the next few days.

Whitesburg—According to reports from the coal mining centers surrounding this city the investigation into the serious coal car shortage has resulted in a notable improvement and mines are operating now with more steadiness. With continued improvement, as promised, eastern Kentucky will show even greater improvement within the next few months than ever before. The output from this section will be considerably increased as a result.

Pineville—J. L. Manning has leased the Black Raven mines at Rim, Ky., formerly operated by the Continental Coal Corporation, but closed down for two years. Mr. Manning is putting the property in order and will begin operations shortly.

OHIO

Columbus—Secretary B. F. Nigh, of the Michigan-Ohio-Indiana Coal Association has arranged to file a lengthy protest with the Ohio Utilities Commission against the new demurrage charges filed with the Commission by many of the Ohio roads. The protest will claim that the increased demurrage charges are entirely too high and unreasonable and places a heavy burden on shippers generally, especially coal shippers. Other shipping organizations will also file protests against the new schedules.

Athens—An order has been secured by L. D. Oliver, receiver for the Lunrig Coal Co., to have the mine pumped dry, after being closed for 18 months, and arrangements are being made for that purpose.

Steubenville—An explosion of gas in the mine of the Steubenville Coal and Mining Co., recently, seriously injured Superintendent Eugene Jones and Mine Inspector McConnell, who were inspecting the mine. There were no other injuries.

INDIANA

Terre Haute—Holdings of the Clay County Block Coal Co. in the northwest part of Vigo County were sold recently in the Superior Court Room by the U. S. Trust Co. as receiver, to Charles M. Elliott, of Indianapolis, for $44,100.

ILLINOIS

Belleville—The St. Ellen mine of the former Jos. Taylor Coal Co. has been sold to L. E. Fischer of the Fischer Fuel Co. and John Henderson, of the West Virginia Coal Co. The property was put into operation at once.

The Avery mine on the Southern Ry. and the Suburban Ry. has been re-opened by the Southern Coal, Coke and Mining Co. after a shut down of 4 years. Some of the screenings from this mine brought as high as $3 recently for northern shipment.

Springfield—The State Public Utilities Commission after a recent all-day hearing on the car shortage, adjourned to Nov. 22, when the hearing will be resumed. The roads will then be asked to show cause why the Commission's order that cars be furnished on a pro-rata basis should not be enforced.

Lenzburg—The old Tirre mine, east of here, has been purchased by L. Senior, of Belleville and is again in operation after having been closed down for several years.

Greenfield—The new coal mine north of this city will be ready for operation in a few days. The finishing touches are being given to the tipple.

Marion—With the recent dismantling of Peabody mine No. 2 here there are at present only 4 mines in Williamson County that are equipped for the production of coal that are idle. These are the Keystone mine, owned by Pittston, Penn. people, and the Colp mine both at Pittsburgh, Ill., the 5th vein mine at Spillertown of the defunct Spillertown Coal and Coke Co. and the Hemlock mine at Herrin of the Taylor Coal Co. Preparations are under way for the re-opening of the Keystone mine and an option on sale prevents the immediate opening of the Colp mine. Every mine in Franklin County is in operation.

Carterville—The Mississippi Valley Trust Co. of St. Louis has sold to a representative of the Peabody Coal Co. the property here of the defunct Carterville Coal Co. known as the Burr mine. The mine has been idle for about 18 mo. and was sold to the Mississippi Valley Trust Co. in Oct. 1915, the trust company being the largest of the creditors. The property is being put in shape for prompt producing.

Personals

James S. Anderson recently coal mine inspector with the Associated Companies, Pittsburgh, Penn., has been appointed mine manager, at mine No. 9 Madison Coal Corporation, Colp, Ill.

Daniel Remaley, of Summit Hill, Penn., where he was connected with Nesquehoning colliery, has been appointed by the Lehigh Coal and Navigation Co. as general manager in charge of all railroad construction in the Panther Creek Valley, with headquarters at Lansford.

John LaRue, fell a distance of 65 ft. down No. 3 shaft of the Lackawanna Coal Co., at Parsons, Penn., recently but is alive and will recover. Mr. LaRue is employed as shaftman and was making repairs when the accident occurred. He was in the shaft when he lost his balance and fell to the bottom. Fortunately he landed in a sump partly filled with water.

Leonard C. Crewe, of New York, general manager of the Munitions Department of the Aetna Explosives Co., has been appointed general manager of the La Follette Coal and Iron Co., at La Follette, Tenn. He will take charge of operations immediately. Mr. Crewe was general manager for several years of the La Folette Iron Co. till about two years ago when it went into the hands of a receiver and was later consolidated with the coal mines of the La Folette Coal, Iron and Railway Co., forming the first mentioned company.

Obituary

E. P. Pierce, aged 62, vice-president and manager of the Shelby Coal Co. and the York Coal and Coke Co., died recently at his home in Ashland, Ky., of Bright's disease.

George A. Simpson, District Superintendent of the Madison Coal Co., died Saturday, Nov. 11, at his home, 909 North Third St., Springfield, Ill. He was 57 years old. He was born at La Salle, Ill., but had lived in Springfield nearly all his life. He had been district superintendent for the Madison company 25 years. He is survived by his wife, three sons and two daughters. The funeral was under Masonic auspices.

B. F. Overholt, prominent coal and railroad magnate of Pennsylvania and West Virginia, died at his home in Scottdale, Penn., recently, after an illness of several weeks. Mr. Overholt was over 60 years of age. He is survived by one son and two daughters. Mr. Overholt was reputed to be one of the wealthiest men in western Pennsylvania, having for years been a coal and railway magnate in that state. He was a promoter of the Buckhannon & Northern Railroad Co. at the time this railroad entered West Virginia, and was also identified with the Grafton Traction Co., the Grafton Fuel Co., and the Overholt Fuel Co.

Neil Robinson, president of the LaFollette Coal and Iron Co., died of heart disease at a Cincinnati hospital Nov. 11, at the age of 63 years. He was born in Gallipolis, Ohio, in 1853. He established himself in Charlestony W. Va., 30 years ago, in the coal business, and became widely known as a mining engineer and coal expert, mining West Virginia coal before the construction

of the Chesapeake & Ohio Railway. He had been president of the LaFollette Coal and Iron Co. of LaFollette, Tenn., for the past three years. Mr. Robinson was prominent in fraternal circles, being past grand master of the Masonic order in West Virginia.

Industrial News

Charleston, W. Va.—The offices of the Imperial Coal Sales Co. were recently removed from Burnwell, W. Va., to the Kanawha Valley Bank Bldg. in Charleston.

Portage, Penn.—The Keystone Lumber Co. of this place has been awarded a contract for five double houses to be erected at Locust, Indiana County, for the Locust Colliery Co.

Elkins, W. Va.—The Davis Colliery Co. recently awarded a contract to the Roberts & Schaeffer Co., of Chicago for a large Marcus patent steel tipple. This will be built at the Sivid mine.

Sparrow's Point, Md.—Ground has been broken for the erection of 240 additional byproduct ovens at the plant of the Bethlehem Steel Co. The addition will consist of four batteries and 60 ovens each.

Cleveland, Ohio—The Adams-Bagnall Electric Co. is now completing an addition to its factory with the installation of a complete vitreous or porcelain enameling plant. This plant will be in operation by Jan. 1 next.

Akron, Ohio—The Akron Coal Co., of this city, has increased its capital stock from $300,000 to $600,000, and part of the increase will be turned over to the stockholders, in the form of a stock dividend of $200,000.

Herndon, W. Va.—The Flat Top Pocahontas Coal Co. has been organized with a capital stock of $50,000 by Joseph Keys, John D. White, W. A. Finney, W. W. Wells, B. T. Ingels, all of Herndon, to operate in this vicinity.

Eckman, W. Va.—The Polaski Iron Co. recently placed a contract with the Roberts & Schaeffer Co. for a complete tipple, consisting of retarding conveyor, Marcus patent picking table screen, Rands shaker loading booms, and larry bins for the coke ovens.

Cincinnati, Ohio—Calvin S. Weakley, special agent of the Department of Justice in charge of the Cincinnati office of that Department, has been instructed to make an investigation into the state of the coal market in this vicinity and report to Washington at once.

Roanoke, Va.—The offices of W. W. Coe, general manager, and O. Lynn Bottomley, secretary and treasurer of the Pocahontas Coal and Coke Co., will in future be located on the sixth floor of the First National Bank Building, Roanoke, Va., with entrance at Room No. 608.

Johnstown, Penn.—The Watkins Coal Co. recently purchased 800 acres of coal land adjoining its operations near Spangler, the consideration being in the neighborhood of $200,000. This gives the company an acreage of about 2,500, which will be opened in a short time.

Cincinnati, Ohio—Exceptions have been filed to the final report of Receivers Edwin Marmet and Charles W. Poysell, of the Marmet Coal Co., by certain parties interested, on the ground, as alleged, that the report does not set forth in sufficient detail the trasactions of the receivers.

Natrona, Penn.—J. N. Stewart, of the Stewart Realty Co., recently completed the sale of 500 acres of coal land for the Woods' heirs. Mr. Stewart sold this tract of coal to W. L. Douglass, and others of Pittsburgh. It is said that mining operations may be started at an early date next year.

Ashland, Ky.—Operators in the Big Sandy Valley are considering a suggestion that the big blocks of coal which top the cars shipped from that section be arranged in order along the sides when shipments go out and that for advertising purposes the letters "Big Sandy Coal" be placed on them in white.

Lethbridge, Alberta—It is expected that there will be an increased demand for American coal in Canadian, western and northwestern provinces this fall and winter. According to one report, enlistments have reduced the normal working force of the mines in the western part of the Dominion approximately 60 per cent.

Philadelphia, Penn.—A group of bankers recently acquired from the American group of stockholders a controlling interest in the Hess-Bright Mfg. Co. This group of bankers also owns a substantial interest in the S K F Ball Bearing Co., of Hartford, Conn. The two companies will be operated independently of each other.

Washington, D. C.—Sixteen applications for the approval of explosion-proof motors are being examined by the Bureau of Mines. All but one of these motors are designed for use with coal-cutting equipment. The electrical section of the Bureau is preparing a set of specifications for explosion-proof storage-battery locomotives.

Boston, Mass.—That the New Haven R.R. has been doing its utmost to meet the critical coal situation in New England may be seen from the following figures: During the six months ended Sept. 30 the road handled 2,100,000 tons of coal against 1,400,000 tons in the same period of 1915. This is a gain of nearly 50 per cent.

Washington, D. C.—Mrs. Lewis M. Jones, widow of the Bureau of Mines engineer, who was asphyxiated while leading a crew of men in rescue work at the mine of the Jamison Coal and Coke Co., at Barrackville, W. Va., will receive $420 annually, according to the provisions of the Federal Compensation Act. There are two dependent children.

Harrisburg, Penn.—The argument in the big Pittsburgh-Westmoreland coal rate case has been postponed by the Public Service Commission and will be held Dec. 12. The State Anthracite Coal Price Commission will resume its inquiry into conditions at Philadelphia next month. The commission will complete its work in December and report to the next Legislature.

Cleveland, Ohio—The time for the closing of coal traffic on the Great Lakes has been extended to Dec. 8, and railroad companies have announced that they will receive coal for shipment by Lake until Nov. 28. The shipping season was extended for the accommodation of coal operators who are behind in filling their lake contracts, owing to the shortage of coal cars.

Wheeling, W. Va.—For the first time in the history of navigation on the river, a tieup of steamboats has resulted on account of the shortage of coal. It is said that all the boats in the Kanawha trade have suspended indefinitely. Coal has reached the highest price ever known, and in some cases is being hauled in wagons 20 miles to keep ferry boats and some Ohio river packets running.

Chicago, Ill.—Judge Landis, in the United States District Court, recently began a hearing on the complaint of 26 coal companies in Illinois and Indiana against 146 railroads, seeking to compel the roads to return coal cars to the tracks of the Chicago & Eastern Illinois, and the Chicago, Terre Haute & Southern railroads. It is charged that the coal companies are unable to obtain enough cars to ship their coal.

Philadelphia, Penn.—The demand for ships of any kind to carry coal to foreign ports continues. Lately the old Government lightship "Relief" was sold to local coal-shipping interests and has been placed in the coal-carrying trade under the name of "Greenland." She has just left here with her first cargo, which is destined to Spain and it is understood that the freight on this shipment will pay the purchase price of the ship twice over.

St. Louis, Mo.—The A. Leschen & Sons Rope Co. is now constructing a $100,000 administration building adjoining its large wire-rope plant. This administration building is to be 115 ft. long and 75 ft. wide, with three stories above a well-lighted basement. The general offices will occupy the first two floors, while the third floor will contain dining rooms, kitchen and rest rooms. In the basement will be recreation rooms and shower baths.

Boston, Mass.—A petition to have an embargo placed on the exportation of coal is being circulated in the Newtons, Wellesley and other towns and cities in that vicinity. The petition is addressed to Massachusetts congressmen and senators, and asks them to use their influence to have such an embargo passed, since, according to the views of the petitioners, the exportation of coal is the principal factor in the increase in price of coal in this country.

Columbus, Ohio—Walter D. McKinney, commissioner of a large coal exchange in Ohio, recently petitioned the Interstate Commerce Commission to investigate the misuse of coal cars, and the diversion of these cars to other lines in Ohio, which is believed to be responsible for a coal car shortage in that state. The petition is based on the claim that the roads outside of Ohio are holding up cars, which, if returned to the state rails, would relieve the car shortage.

Fairmont, W. Va.—Some of the biggest orders for mining machinery and equipment in the firm's history are being received and handled by the Fairmont Mining Machinery Co. The present capacity of the plant is being taxed to supply the demand for the manufactured products, and work is being pushed as rapidly as possible on an addition to the plant which will give approximately one-third more room. Steel mine ties, mine cars and tipples are in strongest demand at the present time.

Buenos Aires, Argentina—It is reported that a discovery of coal deposits in the Province of San Juan has been made. It is stated that this coal is nearly as good as the best quality of Welsh fuel. Experts have not yet had a chance however, to make a scientific test as to quality or to determine the extent of the coal. Coal of proper quality and quantity will prove of immense importance to Argentina, which, in the past, has been prevented from becoming a great industrial country by the lack of a cheap fuel.

St. Louis, Mo.—A hearing was held at the Planters Hotel recently by Commissioner Eugene McQuillin, of the Missouri Public Service Commission, on the application of the Illinois Traction Co. for permission to connect at the St. Louis end of the McKinley Bridge with the Terminal Railway Association tracks, with a view to delivering coal to the Terminal Association for distribution in St. Louis. The hearing was not completed, an adjournment being taken to permit the company to amend its application and make it more specific.

Philadelphia, Penn.—The Philadelphia & Reading Ry. has just placed an order for 3,000 coal cars, the contract being apportioned to three concerns, the idea being to expedite delivery as much as possible in order to relieve the shortage now existing. The cost of the above orders is estimated at $3,000,000. Many people in the coal trade are of the opinion that the railways are more in need of additional motive power than they are of cars, judging by the long delay in removing empty cars from the sidings of dealers and manufacturing plants.

St. Louis, Mo.—Circuit Judge Arnold has granted a permanent injunction against the enforcement by the city of the ordinance requiring owners of moving vans to file with the City Registrar the names of all persons moved by them, and the address to which they move. The purpose of the ordinance was to enable creditors to trace deadbeats. It had the approval of the coal dealers. Judge Arnold held that the ends sought to be accomplished by the ordinance were not within the city's legislative powers, as it attempted to regulate civil rights and was not a police regulation.

New York, N. Y.—The Board of Estimate and Apportionment has taken action to set aside the standard specifications by which the coal supply for the city departments is purchased. This followed the submission of a report by the Bureau of Contract Supervision, in which it was recommended that such action be taken. Later Mayor Mitchell sent a letter to the Board of Aldermen requesting coöperation for the efforts of the Board of Estimate and Apportionment "and of the heads of the city departments to conserve the city's interests in the making of such purchases of coal as may be necessary prior to the first of next January."

Toronto, Canada—According to information received at the Department of Labor, Ottawa, the coal mines at Fernie, B. C., were on Nov. 8 and 9 subjected to a series of violent disturbances in the nature of earth shocks resulting in one fatality, owing to which operations at No. 1 East mine have been indefinitely suspended. Other mines suspended work on the 9th but are likely to resume in a few days but normal production will be considerably affected. Whether the disturbances are of seismic or other origin is not known. The Dominion Observatory officials state that they must have been local as no seismic disturbance is recorded on the official instruments.

Birmingham, Ala.—Shortage of equipment continues to be the most serious factor that the coal trade has to contend with, the supply approximating 50 per cent. of the requirements. The resultant shortage in production and retarded movement has brought prominent railroad officials to the district to urge upon the mines the shipment of as large a quota as possible of contract stipulations, in addition to the numerous representatives of industrial plants. A large delegation of mine operating officials attended the meeting of railroad representatives in Louisville recently, at which the cause of the car shortage was thoroughly gone into and remedial measures discussed.

Wilkes-Barre, Penn.—The shipments of anthracite for October as reported to the Anthracite Bureau of Information at Wilkes-Barre, amounted to 5,870,204 tons, as compared with 5,544,076 tons in September and with 6,683,007 tons in October, 1915. Compared with September of this year, there was an increase in the October shipments of 326,128 tons, while as compared with October, 1915, the record for last month shows a decrease of 812,803 tons. Attention is called, however, to the fact that the shipments in October, 1915, were the maximum for the region, the nearest approach to the record for that month having been made in October, 1912, when 6,665,321 tons were shipped. The total shipments for the ten months ended with October, 1916, were 55,800,620 tons, a gain as compared with the same period in 1915 of 560,673 tons.

Cincinnati, Ohio—The Toledo & Ohio Railway Co. and the New York Central Railway Co. have filed in the United States District Court a petition for leave to purchase the bonds of the Continental Coal Co. and the Kanawha & Hocking Coal and Coke Co., in the case of the United States against the Lake Shore & Michigan Southern and others, known as the soft-coal trust case. The companies asking this permission do so on the ground that they had been held liable in New York as guarantors of the bonds of the Continental Coal Co., a judgment of $1,547,982, having been obtained against the Toledo & Ohio by bondholders. Principal and interest on the bonds, it is set forth, now amounts to $1,709,054, while the upset price of the property to be sold to satisfy them is fixed at $500,000. It is desired to purchase the bonds referred to to protect the rights of the railroad companies interested, and to hold them only until a reorganization of the coal companies is consummated. The court heard the petition, and has taken it under advisement. Formal permission has been granted to John S. Jones of Chicago, to purchase the properties involved, all obstacles to the sale having been removed by the tacit consent of the Government and the dismissal of the pending proceedings.

Market Department

GENERAL REVIEW

Anthracite market is in better control but technical situation still serious. Bituminous slightly easier but very uncertain and subject to wide fluctuations. More spot coal available in Lake district. Eastern coal practically withdrawn from the Middlewestern market.

Anthracite—The extraordinarily mild weather up to the middle of the current week enabled the producing interests to get the market temporarily under control for the first time in the past several weeks and prices were a trifle easier at some of the distributing centers where supplies are more plentiful. Buyers are showing greater patience, and are inclined to give more attention to the confident assertions of the sales agencies that plentiful supplies will be available, though it is obvious that such statements are substantially overdrawn. The technical position of the market is in no wise improved, as will be apparent should the present cold snap continue. Efforts to increase production are meeting with no success, while the storage reserves of the big companies have never before been at such a low point at this period of the year. In the more remote markets, as for instance in New England, the tension continues undiminished, panic prices are the rule and many dealers are completely bare of supplies. Lake deliveries declined 40 per cent. last month, and what little shipments of individual coal are coming through are commanding premiums of $2 to $3 per ton.

Bituminous—The inevitable reaction from the recent spectacular price levels occurred at the opening of the current week, resulting in a more stable and healthy condition in the trade. The change was occasioned by a more liberal car supply in some of the mining regions resulting in largely increased shipments. Prices on speculative coals sagged materially and the situation at the moment is too uncertain to allow any large tonnages to accumulate. However, the situation is very mixed, and further advances would quickly develop in event of any appreciable increase in the demand. In the meantime prices remain substantially above normal, while the market is very strong and buoyant and shows every indication of continuing so. Local strikes in the mining regions continue to interfere with the production while wage increases and promised bonuses are being made to the miners, which are necessitating adjustment of contract schedules.

Lake Trade—The market is somewhat easier, though very mixed and sensitive to any new developments. Some very rigid embargoes in the Pittsburgh district have materially restricted contract shipments, but have thrown more coal into the spot market on which the prices are a trifle lower. Considerable pressure has been exerted in various directions to increase the movement which has had a beneficial effect on the arrivals at distributing centers, and caused a moderate reaction in prices. The increased shipments have, even on occasions, exceeded the market requirements, though no difficulty will be encountered in placing any surpluses. Considerable coal from Illinois continues coming in, operators from that section having successfully underbid the Ohio producers at some of the more accessible points. But in spite of the relativcly easier situation, an inquiry for any considerable tonnage always brings out very stiff prices. The Lake trade continues at a discouragingly low level, and it is clear that there will be a substantial shortage of Eastern coal in the Northwest this winter. Quite a number of shippers in that direction will be unable to complete their contracts.

Middle West—There was a moderate easing up in the situation at the opening of the current week, but this was largely counterbalanced by the very insistent demand from new outside markets. Stocks in dealers' hands are at a low point in spite of the fact that they are offering handsome premiums for tonnage. The steam demand has become so urgent that buyers are in some instances taking over the strictly domestic grades to meet their requirements. The car-supply question looms up more ominous as the season advances, and the past week witnessed an increase in the railroad embargoes. The Eastern coals are practically disappeared from the Middlewestern market, which has further increased the burden on the local producers. No better evidence of the shortage in Lake shipments is needed than the announcement of the extension of the shipping period, which was to have closed Nov. 20, until Dec. 10. Reports from all the distributing centers in the Northwest indicate a uniform decline in shipments and stocks on hand.

A Year Ago—Anthracite trade satisfactory, but less active than anticipated. Reactionary tendency in bituminous though prices are steady. Decline in exports continues. Uncertainties in the Lake markets. Colder weather stimulates buying in the Middle West.

BUSINESS OPINIONS

Boston News Bureau—Looking at the situation in an impartial manner there is no decided change to note. General trade is going on in the even tenor of its way. The country is busy, and the consumptive demand continues despite the general tendency to higher prices. Labor unsettlement is still the worst feature. The railroad brotherhoods seem to be determined to force the Adamson act without waiting to ascertain its constitutionality. But the test between the tyranny of labor unions and the rights of capital and business is bound to come some day and perhaps the sooner the better. Possibly the railroad situation will be cleared somewhat by legislation. There is a possibility, of course, that legislation may make arbitration compulsory, regulate working hours permanently, and take such action as will bring forward the question of rates if it appears that the only relief lies in higher charges.

Iron Age—With demand pressing them on every side for steel products carrying 50 to 200 per cent. larger profits than rails, the kind of deliveries mills will make on rails taken for the first half of 1917 at $10 less than today's prices is already in question. The higher prices of pig iron and of steel products go, the more easily new advances are made. The ultimate effect of the new high levels on the trade of manufacturing buyers of finished steel counts for little in the pellmell rush to get the steel. The crippling of railroad service is more serious. Car shortages are now no more marked than the scarcity of motive power, and there is the certainty of worse troubles later in the year.

American Wool and Cotton Reporter—The wool market has been quiet for the last week because there is less wool to be disposed of, and also because of election week. Only 8,000,000 lb. of wool were sold, compared with 15 000,000 for the previous week. The chief influence of the election on the wool market was that of "holding it up" temporarily. Many in the market were all ready for a big boom.

Bradstreet—While naturally responding to and sharing in the political excitement ruling this week, trade and industry display no real check to the long-continued steady surge forward in demand. Interest in the election returns themselves and uncertainty as to results, rather than doubt as to policies adopted or rejected, acted as deterrents to activity in some lines, but the great majority of reports fail to record any tangible effect upon trade, which has held steadily large at most centers, and even increased at some Northwestern and Southern points. The effect of car shortages, which have curtailed or delayed the movement of coal, lumber and grain, as well as underproduction of materials, are indeed much more often mentioned as drawbacks than is political excitement, and where conservatism is reported in future ordering it is based more on extreme price advances than on political developments.

Dun—All measures of business reflect the holiday interruption, and in some branches an undercurrent of hesitancy is manifest because of the phenomenal rise in prices. Such instances remain the exception, however, and in many cases the rapidly advancing costs, with prospects of still higher levels, act as a stimulus to even larger purchasing. This remarkable condition is strikingly apparent in the leading industries, and the unparalleled iron output last month was particularly opportune, in view of the recent great expansion in new buying. Commercial failures this week in the United States are 285 against 279 last week, 289 the preceding week and 384 the corresponding week last year.

Dry Goods Economist—The interference with business inseparable from a Presidential election was fully apparent in manufacturing, importing and other wholesale circles this week, being prolonged on this occasion by the uncertainty as to the results. The strong situation as to prices and the upward tendency continued in evidence, however, the raw material movement giving both impetus to buying and a further boost to the ascending values. Cotton received a leg-up in its effort to again reach 20c. by a decided advance in the Liverpool market, where American rose in sympathy with sustained excitement in Egyptian based on the assurance of a short crop in the realm of the late Cleopatra.

Marshall Field & Co.—Wholesale dry goods deliveries for the current week have been running ahead of the corresponding period of a year ago. Notwithstanding the factor of a national election, road sales for both immediate and future shipment have been in excess of 1915, indicating that retailers have confidence in the continuance of good business. Merchants attended the market in smaller numbers in the earlier part of the week, which is accounted for by the interest in the ballot. Collections continue good. The market on domestic cottons is very firm.

Atlantic Seaboard

BOSTON

Hampton Roads spot prices continue at highest levels, but with fewer sales. Georges Creek shippers loading boats with other grades to keep consumers supplied. The Pennsylvania coals still strong, but slightly lower. Anthracite situation acute, but a shade less anxiety over prospects for January.

Bituminous—High prices continue at all points and on all grades. Viewed in one way the market is very strong and buoyant, with no tangible prospect of easier conditions for a long period to come. Operators who have free coal and brokers who are speculating report new high figures from day to day and there are, of course, many who feel that any recession in price just at this time is only temporary. On the other hand, there are unmistakable signs of a slight easing off in demand that may shortly be apparent throughout the market. Already, at New York, prices on speculative coals have sagged materially and at this writing f.o.b. mine prices are on a less panicky level than a few days ago.

At Hampton Roads there is only a little change from last week. For the moment fewer vessels are waiting turn, but with all the agencies receipts are so light that large schooners there awaiting charter are still unable to get orders. Transactions between shippers are fewer now. Most of the Pocahontas and New River factors seem to have settled down to applying their receipts exclusively to contracts, both off-shore and coastwise; $7@7.50 is still mentioned as the range for spot coal, but such sales are increasingly rare and are usually only for small tonnages. Consumers who have tried to buy on that basis have been generally turned down, and as a result the market is practically deadlocked so far as current sales are concerned.

Alongside Boston or Providence there is very little Hampton Roads coal in the hands of speculators. Cargoes for distributing points continue to arrive, but in almost every case the coal is for plants which are under contract. There is, therefore, no broad market for these coals at the prices that have been reported, and there is really less chance today of $12 as a market level than there seemed to be a fortnight ago. So far as we know, $9.50 on cars Providence is the top quotation this week.

In effect, Georges Creek has disappeared from the market. Only dribbling amounts reach Tidewater, and cargoes even from Baltimore are few and far between. The arrears on contracts are still being made up on other coals.

A sag in prices is more noticeable in the Pennsylvania grades than elsewhere in the market. From the $6.50@7 level that ruled a few days ago the f.o.b. mine price for the better-grade coals at this writing is nearer $5.50. The spot market is therefore somewhat punctured not only all-rail but at Tidewater as well.

Consumers are now realizing how easy it is to bid up prices, and inquiry has fallen off materially. The mild weather helps allay any undue anxiety and those operators who are sold up are naturally counselling buyers to hold off and await developments. The market just now is so undependable that no large quantities of Pennsylvania coal are allowed to accumulate at either New York or Philadelphia.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clearfields	Camb. & Som's't	Geo'gs. Creek*
Philad'la...	$4.90@5.90	$5.25@6.50	.....
New York..	5.20@6.20	5.55@6.80	.....
Baltimore..	.....	.....	.....
F.o.b. mines	3.65@4.65	4.00@5.25	.....

* On contract.

Pocahontas and New River are quoted at $7@7.50 f.o.b. Norfolk and Newport News, Va., for spot coal, and $8.50@9.50 on cars Boston and Providence for inland delivery. Clearfields range from $7@8 alongside Boston for spot cargoes, and on a slightly higher basis for smaller lots on cars.

Anthracite—Independent coal is still being sold on a panic basis, there being enough dealers in desperate circumstances to absorb about all that is offered; $14 was paid this week alongside Boston for an assorted cargo of egg, stove and chestnut, and $14 and $12 respectively for a cargo of chestnut and pea. The present net circular

of certain of the companies for the latter size is $4.60 alongside.

Deliveries from the companies on the regular circular are as slow as ever, and no special improvement in sight. A few of the anthracite people are talking easier conditions in December and January, saying that much of the extra pressure to get coal is due to the unreasoning attitude of the public in attempting to get supplies they will not use until next season. In most cities in this territory the dealers are declining to deliver more than 1-ton lots, in some cases only ½ ton, and that is having a good effect on hysterical buying.

Recent interviews in the newspapers, however, seem a little beside the mark as far as New England is concerned. It may well be that anthracite collieries are "equipped" to take care of the market throughout the winter, but the fact is that this market is not being taken care of today. There are several dealers right in the vicinity of Boston who are bare of domestic sizes and several others who are out of stock so early they have been obliged to suspend sales of any kind. On egg, stove and chestnut, $8.25 is quoted f.o.b. mines, for small tonnages.

PHILADELPHIA

Anthracite shows a slight temporary easing up. No premium coal now, but dealers still crowd the sales offices. Egg and nut in best supply. Heavy demand for steam coal. Bituminous spot prices stationary but contract prices increased.

Anthracite—The market shows a slight easing off due to the lowered prices for premium coal, which prevailed during the last few days in the territory to the North, East and West. One result of the changed situation is to lessen the frantic buying of the previous fortnight, which is not in evidence now to the same degree, especially on the domestic sizes. The extremely mild weather to date has had its effect and the dealers report a falling off in family coal orders. They claim their orders on hand will keep their equipment active for several weeks, however, and they fear a repetition of the scramble for coal.

An interesting sidelight these days is that the selling by grades has been practically forgotten. Everything goes by sizes and no thought is given as to where the coal is to come from.

While all sizes are still more or less short, the greatest pressure continues for stove coal and it is no unusual sight to see at least a half dozen yards completely out of this grade in the course of a day's journey about the city. If any size can be described as easier than the others it is chestnut and quite a number of dealers this week received extra shipments of this grade. There has been no great shortage of egg, due probably to the fact that there is less of it used for domestic purposes than any of the family sizes. The production of broken is still woefully deficient, especially since the rapid increase in the price of coke.

Considering the situation as a whole there has been no improvement either in the production or car supply. One company had 15 collieries idle one day this week and frequently a smaller number. Another's production was reduced to 43 per cent. of normal for the week for the same cause. The storage piles are being reduced and if cars could be had in sufficient quantities they would practically be cleaned up by the end of this month.

The agents of the big companies are assuming an obviously exaggerated optimistic air. With the small production and practically no storage coal to fall back on, together with the scarcity of cars and the unusual demand, it is difficult to see how they expect to prevent panicky times when real winter weather arrives.

The demand for steam coal of all sizes, including some culm, continues despite the slackening of the upward trend in bituminous coal. The increasing use of culm at this time is commented on quite a little and many shippers are wondering if they will not be able to make a permanent market for this fuel.

The prices per gross ton at mines for line shipment and f.o.b. Port Richmond for Tide shipment are as follows:

	Line	Tide		Line	Tide
Broken	$3.60	$4.75	Buck	$2.00	$2.90
Egg	4.15	5.25	Rice	1.25	2.15
Stove	4.10	5.60	Boiler	1.10	2.00
Nut	4.50	5.55	Barley	1.00	1.90
Pea	3.00	3.90			

Bituminous—After breaking from 10 to 15c. a ton early in the week, prices again reacted and at this time are once more at last week's level. More than likely this was due to the buyers, in the mining regions, deserting their posts over election day, which removed the competition for the time being. However, they are all back again and once more the struggle is on.

It has been pointed out by some that the top of the market has probably been reached with the present record figures, which have now been in effect for 10 days or two weeks. Nevertheless no one is placing any great confidence in this as past experiences have shown that rapid price advances have taken place with but the slightest change in market conditions. This week the Pennsylvania R.R. placed an embargo against the entire city and probably this was also largely responsible for the upward movement of prices. The railroad has announced that the embargo will remain until the congestion is relieved, which may be two days or ten days or two weeks.

It would seem that if the present high prices are at all justified by existing conditions, still further increases are due, if only for the reason that the miners in many regions are demanding, and in numerous cases receiving, increased wages. Already this adjustment of the wage scales is affecting contract coal in this market, as practically all such agreements were made with a wage-change clause and the consumers were this week advised of increased prices for contract fuel. Of course, no great complaint was occasioned by this, as the increase being only 5 to 10c. a ton still makes coal supplied in this manner a bargain as compared with the ruling prices.

There is a fair amount of coal in the city, but with the embarg now on less tonnage was received than in the preceding period. In addition many regions are reporting local strikes, where the operators have not as yet granted increased wages and it is felt that this circumstance will become quite a factor in the market all winter long.

The prices per gross ton, f.o.b. cars at mines, ruling at this time, are about as follows:

Georges Creek Big Vein	$7.00@7.25
South Fork Miller Vein	7.00@7.25
Clearfield (ordinary)	6.75@7.00
Somerset (ordinary)	6.50@6.75
West Va. Freeport	6.25@6.50
Fairmont gas, lump	6.50@6.75
Fairmont gas, mine-run	6.45@6.55
Fairmont gas, slack	5.75@6.00
Fairmont lump, ordinary	6.40@6.50
Fairmont mine-run	6.30@6.40
Fairmont slack	5.75@6.00

NEW YORK

Anthracite dealers expect larger supplies and hold off buying. Prices slightly easier but a heavy day's buying would drive them upward. Bituminous operators face heavy demand and offer bonuses. Labor troubles interfere with production.

Anthracite—A feeling that larger supplies will soon be available has caused a falling off in the demand and a slight drop in Tidewater quotations. Sales early in the week were comparatively few, although most dealers are still short of supplies.

Early this week everybody seemed to be marking time. Retail dealers were not buying and shippers were not pushing sales. This had the effect of increasing supplies of free coal, though one day's heavy buying would probably wipe these out and force prices upward.

The demand from line dealers continues active and prices at the mines remain strong. This has enabled some individual operators to keep their product away from Tidewater. Mine quotations ranged from $6 to $6.50 for the domestic coals and at Tidewater the same sizes were from $8.50 to $9, a break of nearly $2 from the previous week's quotations. Pea coal was stiff and was held at from $5.50 to $6 at Tidewater.

The steam coals are in good condition. The demand and high prices asked for the good grades of soft coal were reflected in the steam-coal situation and prices were stronger due to the efforts of large soft-coal users to substitute hard coals. Buckwheat No. 1, which is not unusually scarce for this season, was quoted at $3 at the mines and from $4 to $4.50 at Tidewater. While some shippers reported no unusual activity in rice and barley, others were quoting these coals at advances of from 80c. to $1.30 above regular circular. None of the better grades were to be had at any price.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken	$4.95	.....
Egg	5.45	$8.50@9.00
Stove	5.70	8.50@9.00
Nut	5.75	8.50@9.00
Pea	4.00	5.50@6.00
Buck	2.75	4.00@4.50
Rice	2.20	3.00@3.50
Barley	1.95	2.35@2.50
Boiler	2.20	.....

Quotations at the upper port are generally 5c. higher, on account of the difference in water freight rates.

Bituminous—The soft-coal market continues to maintain its high prices, but the demand is easier and there is no rush to lay in large stocks. Production has been restricted by labor troubles, operations in the central Pennsylvania fields being constantly interrupted by local strikes. On Monday of this week 12 mines within a small territory in the Clearfield region were idle because of labor difficulties. Some of the mines are producing less than 30% of their normal capacity. Conditions in Washington and Greene Counties have became such that some operators were offering bonuses to their employees to remain at work and other operators are considering making similar offers.

Quotations change from day to day, shippers refusing to name prices for longer than a few hours at a time. The strong call from New England continues and better prices are obtainable than in the metropolitan district, although much complaint is heard of high boat rates. Shippers of central Pennsylvania coals with Tidewater connections are sending considerable coal to Eastern points to make up the deficiency of New River and Pocahontas grades.

The car supply has not improved and no change for the better is expected. Some operators are getting less than half their normal requirements.

No inquiries for export coals were reported, but there was a heavy call for bunker coals.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	St. George	Port Reading	Mine Price
Georg's Crk. Big Vein	$7.50@8.00	$7.50@8.00	$6.00@6.50
Tyson	7.25@7.50	7.25@7.50	6.00@6.25
Clearfield	7.25@7.50	7.25@7.50	5.75@6.00
South Frk	7.50@7.75	7.50@7.75	6.00@6.25
Nanty Glo	7.25@7.50	7.25@7.50	5.75@6.00
Som'r. Co.	7.25@7.50	7.25@7.50	5.75@6.00
Que'ho'ing	7.25@7.50	7.25@7.50	5.75@6.25
W. V. Fa'rm't Th'r'qua	7.00@7.25	7.00@7.25	5.50@6.00
Mine-run	7.00@7.25	7.00@7.25	5.50@6.00
West. Md.	7.25@7.40	7.25@7.40	5.50@6.00

BALTIMORE

Market reacts from the high level. Car supply liberal in this section. Supply now ahead of the demand. Export movement light.

Bituminous—The market here has reacted from the remarkable upward swing that carried even ordinary soft coals to a mine price of $7, due to a liberal car supply. All last week the Western Maryland R.R. furnished nearly a 100 per cent. car supply and on Saturday last removed the percentage distribution, while the Baltimore & Ohio placed an 80 per cent. car distribution at the service of the West Virginia operators and nearly that good in the other regions it taps. As coal began to fill the vacant trackage at Tide and the demand slowed down to a point where buyers were sought, prices began to shade off.

While the market is still very strong for this season of the year, it is relatively weak as compared with a week or so ago, and many operators for the first time in many days are seeking customers. Prices are being held firmly for the time being at the new schedule set, but many coal men believe a still further break is due. Prices to the trade at the mines per gross ton are about as follows: Georges Creek, Tyson, $5.25 to $5.50; Somerset, $5; South Fork, $5; Clearfield, $4.75; Quemahoning, $5; Latrobe, $4.50; Freeport, $4.50; Fairmont gas, ¾, $5; mine-run, $4.50; slack, $4.50.

Anthracite—Trading here is fairly steady. Except for small sums, at no time over 50c., added in some cases to cover premiums paid for prompt deliveries, prices were not advanced here during the recnt flurry. Coals are now back to the October schedule, which will now probably remain throughout the winter. Some of the dealers will have to replace stocks that were drained to meet customers' demands when little coal was coming through. Most of them have considerable business still on hand, as few customers during the past two or three weeks were given the full amount of the coal they ordered.

Exports—The export situation seems due for a betterment, as several charters were announced during the past week. Three vessels cleared here last week for foreign ports, with a total of 9,814 tons of cargo fuel.

HAMPTON ROADS

Slight increase in exports. No improvement in car supply. Prices unchanged. Bunker demands large.

Shipments are on the same level as the past few weeks, considerably below normal, with the exception of exports which are somewhat better. The tonnage shipped from Hampton Roads this month will be substantially below normal for this season. The larger part of the coastwise tonnage is now carried in steamers and these are kept moving with difficulty while barges frequently suffer considerable delay.

The shortage of cars is still acute and there does not seem to be any immediate relief in sight. Stocks are light, with very little coal in transit. Nearly all shippers are short. Bunker demands are heavy; steamers loading at other ports, such as Baltimore, are calling on their Hampton Roads contractors for bunkers when under ordinary conditions their supplies would be taken at the loading port. This is causing a good deal of comment on the part of shippers here who feel that they are being treated unfairly and one bunker contractor has refused to deliver any coal under these conditions.

Advices from Great Britain indicate that prices have a downward trend. This seems to be due to the scarcity of steamers, difficulty of securing export licenses, etc., causing an accumulation of coal. It is interesting to note that the exports for the last week in October show only 11% for neutral countries.

Shippers are refusing new business daily as most of the coal received is required for contract business. There are of course sales from time to time and prices are firm at about the same level as last week. Anthracite dealers report their stocks as being practically depleted and they

are not inclined to replenish them at the high prices prevailing.

Prices for Pocahontas and New River are as follows: For cargo shipment, both coastwise and export $7.50@8 per gross ton; on track for local consumption, $7@7.50 per net ton; bunker coal, $7.50@8 per gross ton; anthracite, $9 per net ton delivered.

PANAMA CANAL

Fuel movement through the canal for the week ended Sept. 30 was as follows:

Vessel	From	To	Tons
Polaria	Newport News	Guayaquil	4,821
Admiral Sebree	Norfolk	Mejillones	2,664
Australian Trsp.	Baltimore	Guayaquil	3,037
Nereus	Norfolk	San Francisco	[1] 11,100

[1] Coal and stores.

Under date of Oct. 15 the following prices were established and will become effective Dec. 1, 1916, per ton of 2,240 lb.

CRISTOBAL-COLON

For steamships, including warships of all nations, delivered alongside of vessels, in lighters or in cars on the wharves and trimmed in bunkers	$8.00
To parties receiving coal in Colon yards in carload lots	8.00
To parties taking small quantities from cars or bins	9.50

BALBOA

For steamships, including warships of all nations, delivered alongside of vessels, in lighters or in cars on the wharves and trimmed in bunkers	9.50

AT PANAMA AND LINE POINTS

To parties receiving carload lots	9.50
To parties taking small quantities from cars or bins	11.00
Santo Tomas Hospital, special rate	7.50

The additional charge of $2 per hour for use of each mechanical hoist or crane is cancelled, effective Sept. 15, 1916.

Ocean Shipping

VESSEL CLEARANCES

The following vessels have cleared with coal cargoes during the past week:

NORFOLK

Vessel	Destination	Tons
George S. Smith[3]	St. Georges	822
Dochra[5]	Buenos Aires, A. R.	2,038
Atlantide[1]	Genoa, Italy	8,331
Tabor[1]	Castries, St. Lucia	5,381
Fjell[3]	Manzanillo, Cuba	950
Lovland[3]	Rio de Janeiro	3,000
Wagama[5]	Rio de Janeiro	2,402
Wagima[5]	Montevideo, Uruguay	4,441
Eliopoli[1]	Genoa, Italy	710
Titania[1]	Genoa, Italy	639
Edward Pierce[4]	San Juan	6,253
Oquendo[5]	Callao, Peru	2,518
Adriatico[1]	Genoa, Italy	1,034

NEWPORT NEWS

Erik II[2]	Puerto Mexico	2,626
Moldegaard[2]	Havana, Cuba	4,092
Persis A. Colwell[5]	Point a Pitre	720
Edward J. Lawrence[2]	Barcelona, Spain	5,012
Oquendo[5]	Callao, Peru	1,972
Orkild[2]	Antilla, Cuba	3,764
Fannie Palmer[2]	Cartagena, Spain	3,091

PHILADELPHIA

Rio Preto	Rio Janeiro	
Mar Cantabrico[2]	Valencia	
Malm	Sagua la Grande	

BALTIMORE

Levnet	Argentina	4,399
Ocland	Cuba	4,550
Antonio D'Ali	Gibraltar	865

[1] Pocahontas Fuel Co. [2] Berwind-White Co. [3] Castner Curran & Bullit. [4] Baker-Whiteley Co. [5] Smokeless Fuel Co. [6] Virginia Coaling Corporation.

OCEAN FREIGHTS

Freight rates on coal to nearly all destinations have advanced materially during the past week, owing to the scarcity of available tonnage. During this period the steamer "Bizkargi Mendi" 5,000 tons, 10%, was chartered in London, from Virginia to Buenos Aires, at $13.20, 750 tons per day discharge, and the same day we chartered a boat for similar voyage at $12 with 500 tons per day discharge. We understand that $13.80 is now being offered for this voyage, but we think that we can shade this rate on boats that we have proposed.

Orders to Cuba, the West Indies and Windward Islands are accumulating and $7.25 is now bid to the Windward. A number of steamers have been chartered for these destinations, but none of these fixtures reported.

We would quote freight rates on coal by steamer as follows:

	Nov. 6	Nov. 13
West Coast Italy	$26.40@27.60	$24.00@26.40
Marseilles	24.00@25.20	24.00 about
Barcelona*[2]	21.60 about	20.40@21.60
Montevideo	12.00 about	13.20 about
Buenos Aires	12.00 about	13.20 about
Rosario	13.20 about	14.40 about
Rio Janeiro	11.00 about	11.00 about
Santos	11.50 about	11.50 about
Chile (good port)	8.00 about	8.00 about
Havana	3.50@4.00	4.00 about
Cardenas, Sagua	5.50@6.00	5.50@6.00
Cienfuegos	5.50 about	6.00@6.50
Port au Spain	6.50 about	7.50 about
St. Lucia	6.50 about	7.50 about
St. Thomas	5.50 about	6.50@7.00
Barbados	6.50 about	7.50 about
Kingston	5.00@5.50	6.50 about
Curacao[1]	5.50 about	6.75 about
Santiago	5.50 about	6.00@6.50
Guantanamo	5.50 about	6.00@6.50
Bermuda	5.00@5.50	5.00@6.00
Vera Cruz	5.50@6.00	6.00@7.00
Tampico	5.50@6.00	6.00@7.00

* Spanish dues for account of cargo. [1] And p.c. [2] Or other good Spanish port.

W. W. Battie & Co.'s Coal Trade Freight Report.

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

OCEAN CHARTERS

Coal charters have been reported as follows during the past week:

PHILADELPHIA

Vessel	Destination	Tons	Rate
Hope Sherwood	Barcelona	522	$14.00
Mary A. Hall	St. John. N. B.	341	
Cratheus	Puerto Padre		
N. M. Porcella	St. Croix	466	
Susie H. Davidson	Cienfuegos	482	

BALTIMORE

Wilmore	Marseilles	3,343	
Levnet	Buenos Aires	2,065	
Ocland	Daiquiri	1,874	
Lewisham[1]	Callao	1,785	
St. Leonard[1]	Chili	2,860	
St. Ronald	Chili	2,766	
Corinthia	River Plate	2,359	
Nos. Sig. Del Baschetto	Italy	1,150	
Rockingham[1]	Chili		

VIRGINIA

Vizkargi Mendi	Buenos Aires		$13.20
John Blumer	River Plata		12.00
Kremlen	Pernambuco[2]		11.00
Elizabeth Weems	Santiago	837	5.00
Fannie Palmer	Spain	1,726	
Wm. H. Clifford	San Juan, P. R.		

[1] Coke. [2] Or Maceio.

COASTWISE FREIGHTS

There is no perceptible change in the freight market from Hampton Roads to Boston. Such charters are now very rare, so closely are shippers confining themselves to steamers and other boats under season terms; $2 is still quoted, but this rate is only nominal. Several large schooners waiting at Norfolk have been unable to secure a charter at any price that would be considered; $2 is likewise the rate to ports like Providence and New Bedford, but usually on boats not over 1,500 tons. Larger boats can still be had at $1.75@1.85.

Two dollars and fifty cents has been asked on barges from Philadelphia to Boston, presumably to load anthracite, but there is no record of any such rate being actually paid; $2 is firm on charters from New York to Boston. For the same loading $1.35@1.50 is sought for Long Island Sound, but barges are in somewhat better supply on account of slow anthracite loading; $3 was paid this week, both to the Kennebec and to the Penobscot.

Lake Markets

PITTSBURGH

Market sensitive. Railroad embargoes restrict contract shipments but make spot coal more plentiful. Consumers coöperating against the high prices.

Last Thursday there was a large increase in the car supply and spot coal dropped $1 a ton in course of the day. This drop was expected to be only temporary as car supplies were poor again at the end of the week also early this week but so many embargoes have been placed that the amount of coal that can be moved to destination is much reduced and some coal that should be shipped on contract is offered in the open market instead whereby prices have weakened further. The main line of the Pennsylvania is completely embargoed for shipment west while the Monongahela division is also embargoed, the Panhandle being free.

Consumers having contracts are going to suffer still more from lack of coal. Buyers of spot coal will have an easier market to buy in but will have more difficulty in securing delivery. The railroads are badly tangled and conditions will undoubtedly be worse as weather grows bad.

The steel interests have become rather wrought up over the continued high price of coal, and a movement has been set afoot to see if something cannot be done. So far as can be ascertained there is no definite plan formulated as yet, the buyers merely approaching each other to consider matters. What seems to be feared in particular is a demoralization in the market whereby coal due on contract would be sold in the open market and consumers might then be buying their own coal at an advanced price.

The turnover in the spot market is rather light, lighter than the average of the past few weeks but prices are averaging about as high as formerly. There are no clear-cut market prices, sales made from hour to hour being at different prices according to circumstances. We quote the market roughly at $4.75@5.25 for both steam and gas coal, mine-run, per net ton f.o.b. mine, Pittsburgh district. Slack generally brings about $4.

BUFFALO

Bituminous market hardly so strong though cold weather is likely to restore it. Anthracite active as ever, due to car shortage.

Bituminous—The market is a trifle easier. The demand for heating has been light all the fall and that has kept the consumption down somewhat. It is not reported that any of the factories or furnaces have curtailed operations, unless obliged to for want of coal.

The single-order trade is light. Some estimates are that the coal selling now is possibly 90 per cent. contracted at moderate spring prices. It is this which makes the operators so united in resisting the demands of the miners for more wages. The miners hear of the big prices paid for coal and feel that they ought to have more for their work. Many operators and jobbers are so short of coal to fill their contracts that they cannot get any surplus.

Jobbers agree that the prices of bituminous are off 50c. from a week ago, but say that with colder weather, they are certain to return. Quotations, per net ton, f.o.b. Buffalo:

Youghiogheny Gas	$6.75@7.25
Pittsburgh Steam	6.50@7.00
Ohio No. 8	6.50@7.00
Allegheny Valley	6.30@6.80
Pennsylvania Smokeless	6.20@6.70
All Slack	5.75@6.25

Anthracite—Consumers are uneasy and will often pay big premiums for independent coal if quick delivery can be obtained though the big shippers steadily declare that all the consumer needs to do is to take a ton or so and wait his chance for more. Most of the shippers say that the supply is better than it was and that there will be no real difficulty.

With some independent jobbers reporting prices as high as $12 only one of the standard shippers has advanced prices the increase being 25c. a ton on stove and 15c. on chestnut. The others continue as formerly, per gross ton in car lots, as follows:

Grate	$5.85	Chestnut	$6.35
Stove	6.10	Pea	5.00
Egg	6.10	Buckwheat	3.50

Prices are all f.o.b. cars, with 25c. per ton additional for delivery on board vessel.

Lake shipments are fair, considering the efforts to divert the coal to local uses. For the week the amount loaded was 90,400 net tons as follows: 45,300 tons for Duluth and Superior, 16,500 tons for Chicago, 9,000 tons for Milwaukee and 7,000 tons for Fort William. Rates of freight are not so strong as usual at this time of the year. Advances were made sometime ago to Lake Michigan and the light run of grain to the lower Lakes keeps rates at $1 and 75c. to Lake Michigan and 30c. to Lake Superior.

TORONTO, CANADA

Bituminous selling at high prices. Very little coming forward. Dealers refuse to make large deliveries and advise rigid economy.

Owing to the shortage of supplies on hand and increased prices at the mines, coal has greatly advanced in price. Anthracite is selling at $9 per ton and bituminous at figures ranging from $10 to $15. Hardly any coal is coming forward and dealers are only sending out small quantities so as to keep as many as possible of their customers going.

In justification of what many regard as an unwarranted increase, dealers quote figures showing the price of soft coal at the mine is $7.50, as compared with $1.50 last April. Several of the leading dealers have published a message to consumers advising the most rigid economy in consumption and telling them not to expect immediate delivery of large quantities.

TOLEDO

Factories short of fuel. Car shortage acute. Abrogation of a city contract.

The coal shortage continues and there is little relief in sight. Many factories are running on short fuel supply, especially in northwestern Ohio though the condition is serious everywhere. The state utilities commission has taken a hand in the matter and demanded car reports of the railroads, but it has had little effect on the general situation. The railroad officials are inclined to blame the middlemen or brokers, who, they claim are holding cars of coal for speculative purposes.

The Central States Coal Co., recently abrogated a contract to furnish the city with slack coal at $2.15 per ton, and the city has been forced into the open market for 1,000 tons of steam coal for the waterworks department; this coal will have to be purchased at from $5.50 to $6.50 per ton. The contract was broken because of the destruction by fire of the power plant at the mine under contract with the Central States Coal Co., located at Prestonburg, Ky.

A meeting of Toledo coal dealers was held last week to discuss means of handling the serious situation which has arrived. The dealers will take no drastic action looking to the conservation of coal supplies at this time but may do so later on when the cold weather will make conditions more serious.

DETROIT

Steam coal is scarce, but seems to be obtainable for those paying the price. Domestic stocks low. Lake trade drags.

Bituminous—Material progress has been made toward averting what threatened to become a serious shortage of coal in Detroit. As a result of the campaign to expedite unloading of cars empty cars are being returned more speedily to southern roads. The Chesapeake & Ohio in consequence has called off the embargo it had placed on movement of coal to points north of Cincinnati and the Louisville & Nashville has given assurance similar action will be taken soon if the cars are kept moving in a way to maintain its supply of equipment.

It is believed that the coal now in the city, with what is being brought from Illinois and other sections will be sufficient to meet requirements until the southern roads resume shipments. Continuance of favorable weather conditions, is the principal factor in avoiding a hardship on domestic consumers. Supplies in hands of the retailers are low; mine quotations on domestic bituminous hold about the same level as for steam coal.

Anthracite—Stocks of anthracite are running low and retail dealers are restricting deliveries, in many cases, to small amounts. The slow movement from the East is expected to improve after the termination of the shipments to upper Lake ports by boat. Retail prices are unchanged.

Lake Trade—Rail shipments to ports on Lake Erie are so greatly curtailed that some of the shippers have much difficulty getting sufficient coal to supply fuel to Lake freighters under contract. Shippers are far behind in delivery at upper Lake ports and quite a number will be unable to complete their contracts before navigation closes. Vessels under contract to move the coal are being sent up for grain or iron ore, without cargo on the upbound trip.

CLEVELAND

Local market weakens. Big accumulation of coal here. Mine quotations still at top prices. Canadian markets paying best figures for Lake coal.

The local market has now reached the stage when most anything has a good or bad effect on prices. The general tendency now is to ease up. The railroads have been keeping after jobbers to move their coal more promptly, which has put considerable coal on the market. Fresh shipments are beginning to pile in and the local market today is overloaded with coal and everyone is trying to get out from under, with the result that prices dropped one dollar per ton very quickly and may go still lower, unless there is some real cold weather soon. A good deal of coal that can be reconsigned out of Cleveland east or west has been bought up at fair prices, as both these points seem to hold up better than Cleveland markets.

Lake business which should be booming now is still light and there is no question but what the Northwest will be short this winter, and early deliveries next spring will sell at a premium. St. Lawrence River points are paying high prices for coal and getting same as most boats in that trade are small-tonnage boats and it is easier to make up cargoes for them. The scarcity of coal available for these points have forced the vessel freights down at least a dollar per gross ton, which has compensated in a measure for the increased price of coal. Canada is also using more coal than ever before and was unprepared to take care of their requirements this year.

While the local market has suffered because of so much coal on track prices for shipment remain firm, the steady demand from the East having held the mine price up to $4.50 to $5. Illinois coal for the first time in years has come east of its home state and a good deal of it is going into Detroit markets, where the producers have underbid the Ohio coals.

All grades of gas coal have been bringing top prices along with anthracite and No. 3 Pocahontas. These grades will continue to hold firm and go higher as the winter approaches.

Car supply has been a trifle better than a week ago, but railroads do not promise that it will continue so for any length of time. Labor is no more plentiful at the mines while the outlook in large manufacturing centers is better. There is nothing in sight as yet that will bring the price of coal down to normal. Prices for shipment from the mines are about as follows: No. 8, three-quarter, $4.50@5; mine-run $4.25@4.75; slack, $4@$4.50; Youghiogheny, any grade or size, $6@6.50; anthracite, about $2 above circular, all grades: Pocahontas, mine-run, $4.50; Kentucky lump, $4; West Virginia gas coals, $5, steam, $4@4.50

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	$4.50@5.00	$4.00@4.50	$4.50@5.00
Cambridge	4.50@5.00	4.00@4.50	4.50@5.00
Middle Dist.	4.00@4.50	4.00@4.25	4.00@4.25
Hocking & Pomeroy	4.00	4.00	4.00
Youghiogheny	7.00@7.50	.....	7.00
Pittsburgh	4.50@5.00	.....	5.00
Pocahontas	.....	6.00	.....
Fairmont	5.50	5.00	5.00

COLUMBUS

Slight falling off in demand caused by continued warm weather and uncertainties of the elections.

The trade shows signs of a rest from the strenuous conditions of the past few weeks. The idleness attending the election together with warm weather has caused a slight let-up in the demand. There is still a scarcity of tonnage in most localities and the present lull is believed to be only temporary. More strenuous conditions are expected at the first cold snap.

Dealers' stocks are rather short and buying is going on actively. Practically all of the orders are for immediate delivery, as jobbers are loath to accept orders for future shipments. Retail trade is still active and dealers have all the business they can attend to. In many instances stocks are still too short to make full deliveries on orders. Retail prices are firm at the levels which have prevailed recently. There is a good demand for Pocahontas and West Virginia splints.

Lake trade is still rather active, as shippers are endeavoring to get as large a tonnage as possible to the head of the Lakes. Free bottoms are quite scarce and Lake prices show a tendency to advance still higher.

Steam business is active as manufacturing continues brisk. Surplus stocks in the hands of large steam users are small and in some instances they are running from a day-to-day supply. Public service corporations are short of fuel. Railroads are using quite a large tonnage and confiscation of cargoes to keep the trains running has been resorted to by some lines.

Production is rather light because of car shortage. Most of the Ohio fields are credited with about 50 per cent. of normal output The car supply is not improving and in some instances it is worse.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$5.25	$5.25	$5.00
Inch and a quarter	5.00	5.25	
Three-quarter inch	5.00	5.25	5.00
Nut	5.00	5.00	4.75
Egg	5.00	5.00	
Mine run	5.00	5.00	4.75
Nut, pea and slack	5.00	5.00	4.75
Coarse slack	5.00	5.00	4.75

CINCINNATI

Mild weather continues to restrict domestic demand, resulting in increasing strength in screenings. Record prices prevailing. The car shortage still the big factor in the market.

In view of the fact that the car supply at the mines is still reported as less than 50 per cent. of requirements, it is fortunate that the weather continues mild, with a resulting limited demand for domestic coal. The first real cold snap will bring a heavier demand than the trade can handle under present conditions, as dealers have been unable to secure stocks and are not ready to meet winter demands.

The steam market is strong, as little is being made on account of the slow domestic market and the limited car supply. The price for this grade, in the better bituminous varieties, is whatever the operator chooses to ask, sales being reported around $4.50@4.75 for West Virginia districts and $4@4.50 for eastern Kentucky coals, while Pocahontas nut and slack has sold as high as $5.50@6 per short ton f.o.b. mine. Mine-run in all varieties is 25@75c per ton below nut and slack, as many industrial concerns cannot use it for steam purposes without crushing. However, the amount of free coal is so light that sales are rare, and quotations are not intended to indicate that any quantity can be had at the price given, because this is not the case.

LOUISVILLE

Some easing up in the Kentucky market due to prospects of relief from car shortage. Southern industries getting supplies during embargoes.

Interest during the week has centered on the Interstate Commerce Commission inquiry into the car shortage. There is a general feeling that some relief will be forthcoming shortly, and a better supply of cars at the mines is being reported. This has had a tendency to soften the market, especially on domestic coal. The Eastern Kentucky market is now selling mine-run at a higher price than block. The insistent demand is from the industrial consumers, who are generally very short on coal, while continued mild weather has materially contributed to the lessened demand for domestic.

Western Kentucky finds the situation similar at points served by the Louisville & Nashville, though Illinois Central mines are getting fewer cars. When a good supply of cars is provided, the bulk of the output is taken by the railroad for its own uses.

Eastern Kentucky sales, f.o.b. the mines, long ton basis, have been made during the week at $3.50@3.75 for block; $3.25@3.50 for egg; $3.50@4 for mine-run while the nut and slack market has shown a slump of about 75c.

Western Kentucky is still quoting lump at $3; mine-run around $2.50, and nut and slack at $1.85.

BIRMINGHAM

Steam coal prices continue to advance. Car supply slightly improved on some lines. Water transportation retarded by low stage of Warrior River.

With prices of steam coal ranging from $4 to $4.50 at the mines the market continues very strong, inquiries being received from almost every direction. Small spot lots have been sold as high as $5 mines. Railroads and other public service corporations not having their requirements contracted for, and those unfortunate enough to have their contracts expire at this time, are having great difficulty in securing enough fuel in the spot market to meet their actual needs and are compelled to pay stiff prices for what they get. Domestic grades are in fair demand considering the continued warm weather and the mines have sufficient orders booked to maintain as steady operations as the car supply will permit, for some time to come. Bookings are being made for deliveries during the latter half of December. There has been no material increase in domestic prices during the past week.

The car supply with the Louisville & Nashville and the Southern Railroads has shown some improvement in the last few days, although this betterment may be of only a temporary nature. The shortage with the Frisco lines has been more acute than ever, due to the strike in the Oklahoma fields, which has forced this line to use a great deal of equipment for handling company coal for their western lines. Barges conveying coals to New Orleans, Mobile and other gulf markets are making very slow schedules, due to the low stage of the river.

Coke

CONNELLSVILLE

Production decreased and market stiffer. Record prices on contract foundry coke.

Coke production suffered a serious curtailment Friday and Saturday of last week, on account of especially poor car supplies, and the market is regarded as stronger than ever. Sales of both furnace and foundry coke are so light that the market is not well established and there may be fluctuations of 50c. a ton between sales. In the past few days there have been sales of spot furnace coke at both $7.50 and $8, though the $8 was considered exceptional. Still higher prices are predicted for this week, however. A prominent producer of foundry coke has marked up the price on spot foundry coke to $11, being indifferent whether or not any sales are made for two or three days.

There is only occasional inquiry for furnace coke on contract, the consumers not yet covered feeling that it would be practically impossible to contract at a fair figure at present, and being doubtful whether they would obtain deliveries in any event. In foundry coke there is more interest in contract material and one contract has been closed for the whole of 1917, instead of the usual six months. The highest price paid on contract foundry coke for years was paid in a transaction in the past few days, $6.25, but some sellers are now demanding $6.50.

We quote the market roughly as follows: Spot furnace, $7.50@8; contract, nominal, $4; spot foundry, $9.50@10; contract, $5.50@6.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Nov. 4 at 408,282 tons, a decrease of 24,049 tons, and shipments at 397,064 tons, a decrease of 20,798 tons.

Buffalo—The demand continues good and prices hold fairly firm. With cars so short and men so scarce the output is small especially this month, with so many holidays and no decrease in consumption. It is admitted that prices are abnormally high, but the consumers are far from consenting to a shut down as yet and may con-

tinue to pay higher prices sometime yet. Quotations are as formerly, of best Connellsville foundry and furnace, $10; high sulphur, $8.45; stock, $7.40, all prices per net ton, f.o.b. Buffalo.

Chicago—Spot byproduct and foundry coke brings anywhere from $8 to $10. Producers are sold far ahead in the future. Shortages of labor and cars stimulate high prices. Indications point to $10 ruling price on byproduct and foundry sizes very shortly. Quotations per net ton f.o.b. cars Chicago, are as follows: Connellsville, $9@9.25; Wise County, $9@9.25; Byproduct Foundry, $8.25@9.50; Byproduct Domestic, $8.25@8.50; Gas House, $6.50@6.75.

Birmingham, Ala.—Both furnace and foundry coke are enjoying a healthy demand, the former being quoted around $4 per ton ovens and the latter at $5. The free tonnage of both grades is limited. Producers with business booked in the Pacific Coast territory have been afforded some relief from car shortage recently by the Southern Pacific routing a large number of box cars built in the north through Birmingham. Much difficulty has been experienced in securing equipment for Western and Southwestern business, only foreign line cars being used for this movement.

Middle Western

GENERAL REVIEW

Prices continue at top level. Car shortage more acute. Railroad embargoes bring relief in some sections. Lake season prolonged.

The Western coal trade has seen a strenuous week, with no relief in sight. The car situation continues the principal factor with the movement slower. Embargoes placed for the purpose of relieving the situation at Illinois and Kentucky mines, and distributing centers like Cincinnati, Louisville and other Western points, have been beneficial, but have also embarrassed other sections.

The anthracite and smokeless situation at Western points could hardly be more serious. All-rail shipments of anthracite are dwindling, and Lake deliveries decreased about 40% last month. No smokeless free coal is available at western distributing centers.

Undoubtedly the fall demand is greatly in excess of previous years because of the small stocks stored last spring and summer. Any sudden sharp drop in temperature would bring additional hardships to the consumer and grave embarrassment to the retail dealer. Yard stocks have declined to a low point in spite of the fact that buyers are anxious to place orders at prevailing premiums.

Spot coal is now bringing most any price asked, and it is interesting to observe that steam demand is absorbing sizes that were formerly considered only for domestic purposes. Steam users not covered by contracts are combing the market for supplies, but free tonnage is limited.

The operators this year do not anticipate the usual quiet period from the middle of December to the middle of January in which to overcome the shortages in deliveries. The acute car shortage is aggravated by an extraordinary demand for steel and iron products in which coal cars have been utilized. Most of the mines were closed on election day, which accentuated the shortage of tonnage.

Notwithstanding mild weather prevailing generally throughout the Northwest, Illinois coal is selling in that territory at $3.50 f.o.b. mines, with Lake bituminous lump commanding $5 f.o.b. docks, and a shortage existing at a number of points. The docks are way behind with their loading of nearly all grades of coal, and movement of Indiana and Illinois shipments to the Northwest is perceptibly slower.

Navigation on the Lakes was to have closed Nov. 20, but the extraordinary demand has caused extension until Dec. 10. Statements have been sent out from Milwaukee showing a deficit of approximately 250,000 tons in the coal supply this year. The movement to the head of the Lakes in October showed a shrinkage of nearly 450,000 tons as compared with September.

CHICAGO

Car shortages interfere with deliveries. Prices moving up steadily. Steam trade asking for increased quantities. Contract smokeless shipments short.

But little difference now exists in current quotations for steam and domestic sizes produced at the southern Illinois mines. Lump, mine-run and screenings are bringing about the same range of prices, viz.: from $3.25@4. Ten cars of Franklin County domestic lump were sold as high as $5.50. Fine coal readily brings from $3 to $3.50. The Chicago district has placed increased orders with Williamson County mines this week for steam sizes. Spot domestic sizes from Williamson and Saline County have sold as high as $5. Coal supply at southern Illinois mines runs about 50% below normal with the demand approximately 50% above normal. The situation has almost reached a point where the southern Illinois operator can name his price for free coal. In the Springfield and central Illinois districts the situation shows further strength. Increased quantities of domestic coal have been shipped to Michigan points and Detroit at maximum prices. The operators are far from cheerful even with these high prices prevailing, owing to the car supply being very short.

Shipments of Indiana coal to this market have been lessened because of the excessive demand at Indiana points where there is a shortage of Eastern coal. Indiana production is going to Ohio points where it was never before sold, at around $4@4.50 per ton. The Indiana mines are working about half time. Operators are asking their customers to unload equipment quickly, and to urge the carriers to move empties promptly back to the mines for reloading.

Dealers complain that smokeless shippers are not filling their contracts and the supply of free coal is very limited.

Contract Hocking shipments are scarce. A heavy tonnage is moving from Ohio to the Lakes for shipment to the Northwest at extremely good prices. Splint tonnage reaching Chicago is very limited, since the Eastern demand at higher prices absorbs the production. A wild flurry in Kentucky coals, with the situation complicated by railroad embargoes, makes it almost impossible to quote on those grades.

The local anthracite situation shows no change from last week. The docks are almost bare of coal, and with no relief in sight predictions are made that anthracite sizes will be selling at $15 a ton wholesale by the end of the year. What little coal the independents offer for all-rail shipment to this territory sells at a premium of from $2 to $3 per ton at this time.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars mines:

	Williamson & Franklin Cos.	Springfield	Carterville	Clinton	Green & Knox Cos.
Lump	$3.50@4.00	$3.25@4.00	$3.50@3.75	$3.50@3.75	$3.50@4.00
Steam lump	.....	.....	.....	3.00@3.25	.....
Egg	3.50@3.75	3.50@3.75	3.50@3.75	3.25@3.75	3.50@3.75
Nut	.....	3.25@3.50	.....	3.00@3.50	3.00@3.50
No. 1 washed	3.25@3.50	.....	3.25@3.50	.....	.....
No. 2 washed	3.25@3.50	.....	3.00@3.50	.....	.....
No. 1 nut	3.50@3.75	.....	.....	.....	.....
No. 2 nut	3.25@3.50	.....	.....	.....	.....
Mine-run	3.25@3.75	3.00@3.50	.....	3.00@3.50	3.25@3.50
Screenings	3.00@3.50	3.25@3.50	.....	3.25@3.50	3.50

	Saline & Harrisburg	Pocah. & W. Va. Smokl.	Penn. Smokeless
Lump	$3.50@3.75	$5.00@5.50	$4.75@5.50
1½-in. lump	.....	.....	.....
Egg	3.25@3.50	5.00@5.50	4.50@5.25
Nut	3.25@3.50	.....	.....
No. 1 nut	3.50@3.75	.....	.....
No. 2 nut	3.25@3.50	.....	.....
Mine-run	3.25@3.50	4.00@5.00	4.00@4.50
Screenings	3.25@3.50	.....	.....

Splint lump, $4@5; Hocking lump, $4.50@4.75; E. Kentucky lump, $4.50@5.50.

Local conditions were eased up some by the mild weather, but the change in temperature caused a reaction and prices of the present week may exceed anything that has been asked in the past. The local demand has been lighter, and the demand from the territory north of here and west of the Mississippi is easing up a trifle; but on the other hand, orders for Detroit, Chicago and the North are coming in faster and better offers are made for prompt shipment. Jobbers are bidding wildly for all available free coal, and advances of 25c. and 50c. per ton over the last price offered is not uncommon. Restrictions on equipment is cutting down the tonnage available for outside markets and several railroads are putting embargoes into effect wherever possible.

The steam market is a spontaneous one and will flare up one day with prices out of sight and reason and drop off 50c. a ton the day following. Even at that, there is very little free steam coal obtainable and it readily brings a premium.

Equipment conditions were a trifle worse the past week, some mines only getting a little over one day's work out of the week. There was an improvement on the Iron Mountain and the Burlington in the high-grade field, and on the Vandalia, B. & O. and L. & N. in the inner district. An order for 15,000 tons of Franklin County mine-run for a northern railroad placed about a month ago at $1.50 the mines remained unfilled because the railroad has been unable to get enough of its own equipment to take care of this tonnage. Outside demand continues from Detroit and points East at prices that fluctuate daily but which are considerably better than local. Anthracite received during the past week amounted to only about 30 cars, and almost 20 cars of smokeless came through.

ST. LOUIS

Steam sizes stronger and the market responds to the slightest demand with an increase. Record prices prevailing on some sizes. Car supply worse. Colder weather will make the situation tense.

On domestic sizes shippers from the high-grade field are still two or three weeks behind. In the Mount Olive and Standard fields the condition is easier, but with a few days of cold weather they will pile up more orders than can be shipped in two or three weeks with the present equipment supply.

The local market f.o.b. mine is about as follows:

	Williamson and Franklin Co.	Mt. Olive[1]	Staunton[2]	Standard
6-in. lump	$2.75@3.00	$3.00	$2.75	$2.50@2.75
3x6 egg	2.75@3.00	.....	2.75	2.50@3.00
2x3-in. nut	2.75@3.00	.....	.....	2.50
No. 2 nut	2.50@2.75	.....	.....	.....
No. 3	2.25@2.50	.....	.....	.....
No. 4	2.00@2.25	.....	.....	.....
No. 5	2.00@2.25	.....	.....	.....
2-in. screenings	2.00@2.25	1.75@2.00	1.75@2.00	1.75
2-in. lump	.....	2.75@3.00	.....	2.00@2.50
3-in. lump	.....	2.75@3.00	2.75	.....
Steam egg	.....	.....	2.75	2.00@2.50
Mine-run	2.75@3.00	.....	2.75	2.00@2.50
Washed No. 1	2.75@3.00	3.50	.....	.....
Washed No. 2	2.50@3.00	3.00	.....	.....
Washed No. 3	2.25@2.50	2.75	.....	.....
Washed No. 4	2.00@2.25	2.75	.....	.....
Washed No. 5	2.00@2.25	.....	.....	.....

[1] Regular trade 6-in. lump, $1.85; 3-in., $1.75. [2] Regular trade 6-in. lump, $2.00.

Williamson and Franklin rate 72½c. Others, 57½c.

Market on coal for outside shipment North and East is f.o.b. mine:

	Williamson and Franklin Co.	Mt. Olive	Staunton	Standard
6-in. lump	$3.50@4.00	$3.50@4.00	$3.00@3.25	$3.00@3.25
3x6 egg	3.50@4.00	3.50@4.00	3.00@3.25	3.00@3.25
2x3-in. nut	.....	3.50@4.00	.....	3.00
No. 2 nut	.....	3.50@4.00	.....	3.00
No. 3	3.00@3.25	3.25@3.50	.....	3.00
No. 4	3.00@3.25	.....	.....	2.75@3.00
No. 5	2.50@2.75	3.00@3.25	.....	2.75@3.00
2-in. screenings	2.50@2.75	3.00@3.50	3.00@3.50	2.75@3.00
2-in. lump	.....	.....	.....	3.00
3-in. lump	.....	.....	3.00	.....
Steam egg	.....	.....	3.00	3.00
Mine-run	3.00@3.25	.....	3.00	2.75@3.00
Washed No. 1	3.50@4.00	4.00	.....	3.00
Washed No. 2	3.25@3.50	3.75	.....	3.00
Washed No. 3	3.00@3.25	3.75	.....	3.00
Washed No. 4	3.00@3.25	3.75	.....	2.75@3.00
Washed No. 5	3.00@3.25	3.00@3.25	.....	2.75@3.00

KANSAS CITY

With the gas situation in Kansas City growing worse and cold weather already set in the coal dealers are in doubt as to how they will be able to supply the consumers this year. Just when the market needed favorable weather so the dealers could stock up, a severe cold spell appeared and orders for coal have been coming in fast.

Prices have advanced as a result of the car shortage and the strike in the Oklahoma field.

The Kansas City market has been receiving some Iowa coal. This happens only when the market is in a very bad condition and prices high.

General Statistics

COAL MOVEMENT

Fuel shipments over 13 leading Eastern carriers for July and 7 months of 1915-16 were as follows, in short tons:

Classes and Railroads	July 1915	July 1916	7 Months 1915	7 Months 1916
Anthracite:				
Baltimore & Ohio	70,248	87,317	676,842	858,784
Buffalo, Rochester & Pittsburgh	8,970	8,594	97,330	101,805
Buffalo & Susquehanna	207	657	3,595	4,005
Chesapeake & Ohio	1,319	1,574	7,737	7,992
Erie	783,726	3,986	5,112,386	5,545,115
Huntingdon & Broad Top Mountain	73	28	249	430
Pennsylvania	653,020	906,509	6,068,036	6,766,550
Pittsburgh, Shawmut & Northern	278	1,108	7,056	7,319
Virginian	175	159	1,004	2,246
Western Maryland	22,933	26,055	188,645	196,599
Total	1,540,949	1,035,987	12,162,880	13,490,845
Bituminous:				
Baltimore & Ohio	3,042,427	3,147,908	17,824,014	20,608,571
Buffalo, Rochester & Pittsburgh	652,776	745,376	4,052,080	5,328,469
Buffalo & Susquehanna	77,734	131,426	539,648	861,791
Chesapeake & Ohio	2,054,656	2,275,304	12,172,712	15,907,684
Erie	560,393	619,689	3,522,098	4,985,296
Huntingdon & Broad Top Mountain	81,143	75,272	534,803	637,489
New York Central (Buffalo and east)	504,002	569,843	3,394,043	4,556,879
Norfolk & Western	2,632,978	2,608,446	13,881,530	17,896,784
Pennsylvania	3,668,146	4,014,712	23,855,500	28,283,849
Pittsburgh, Shawmut & Northern	232,836	244,193	1,256,411	1,748,060
Virginian	360,537	426,003	2,148,670	3,049,347
Western Maryland	742,216	768,557	4,721,982	4,691,103
Total	14,609,844	15,626,729	87,903,491	108,555,322

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts in September and for the 3 months ending September for years 1915 and 1916, in short tons:

Destination	September 1916	%	September 1915	%	Three Months 1916	%	Three Months 1915	%
Tidewater	386,701	18	425,526	20	1,315,019	19	1,414,506	22
East	204,014	9	201,715	9	580,654	9	554,378	9
West	1,312,493	61	1,360,630	63	4,203,278	62	3,971,960	61
Total	1,903,208		1,987,871		6,098,951		5,940,844	
From Connections								
Bituminous	252,770	12	175,087	8	658,679	10	513,395	8
Anthra. (local)	286		467		621		605	
Anthracite	1,933		1,487		4,913		4,475	
Total	2,158,630	100	2,164,912	100	6,763,597	100	6,459,319	100
Company fuel	188,688		169,598		492,238		479,624	
Total	2,347,318		2,334,510		7,255,835		6,938,943	
Coke	43,069		30,366		122,435		77,336	

ANTHRACITE SHIPMENTS

The shipments of anthracite for October amounted to 5,870,204 tons, as compared with 5,544,076 tons in September and with 6,683,007 tons in October, 1915. Compared with September of this year there was an increase in the October shipments of 326,128 tons, while as compared with October, 1915, the record for last month shows a decrease of 812,803 tons. Attention is called, however, to the fact that the shipments in October, 1915, were the maximum for the region, the nearest approach to the record for that month having been made in October, 1912, when 6,665,321 tons were shipped.

The total shipments for the 10 months ended with October, 1916, were 55,800,620 tons, a gain as compared wtih the same period in 1915 of 560,673 tons.

In comparing the total shipments from January to October in 1916 with those for the same period in 1915, consideration must be given to the fact that in addition to the increase of 560,673 tons the markets have absorbed a large amount of coal that was in storage at the beginning of the season. The shipments from storage yards in October amounted to approximately 500,000 tons, which are not included in the railroad shipments reported for the month and reduce by that amount the apparent shortage as compared with October, 1915

Coal on hand at Tidewater shipping ports: Oct. 31, 1916, 270,799 tons; Sept. 30, 1916, 367,984 tons; decrease, 97,185 tons.

COAL MOVEMENT

The following is a statement of carloads of bituminous coal and beehive coke that originated on 49 railroads in September, 1916, compiled from reports received by the Geological Survey, Department of the Interior, by noon, Oct. 16, 1916.

Comparative figures based on reports of 49 roads for September, 1916, include 29 roads in Eastern classification territory (including Illinois); 12 roads in Southern classification territory and 8 roads in Western classification territoy.

	Sept. 1916	Aug. 1916	Sept. 1915
Carloads of bituminous coal	441,256	455,453	437,267
Carloads of beehive coke (9 roads)	54,664	51,834	46,976

September, 1916, showed an increase in shipments of bituminous coal of 0.9 per cent. over September, 1915, and a decrease of 3 per cent. from August, 1916. The increases in shipments of beehive coke for the same months were 16 per cent. and 5 per cent., respectively.

SOUTHWESTERN TONNAGE

Statement of shipments from the southwestern mines for June and July of this year and last year is as follows:

State	June 1915	June 1916	July 1915	July 1916
Missouri	166,885	202,518	188,816	183,075
Kansas	449,803	371,374	453,935	473,417
Arkansas	71,498	79,319	78,568	81,060
Oklahoma	201,126	146,604	204,993	158,319
	889,312	799,815	926,312	895,871

This statement only covers the tonnage of members of the Association which we estimate to be at least 95% of the tonnage produced in the four states.

	Domestic Sizes October 1916	October 1915	Ten Months 1916	Ten Months 1915	Total October 1916	October 1915	Ten Months 1916	Ten Months 1915
Phila. & Reading	1,019,191	1,031,456	9,119,586	8,019,892	1,206,570	1,199,284	10,601,274	9,195,089
Lehigh Valley	945,431	1,120,262	8,852,197	9,604,914	1,073,176	1,266,539	10,009,618	10,714,002
Cen. R.R. of N. J.	483,883	714,136	4,861,402	5,349,427	611,158	895,895	5,913,706	6,532,694
D. L. & W. R.R.	794,153	743,449	7,398,192	6,439,640	946,945	888,609	8,705,328	7,679,800
Dela. & Hud. Co.	493,992	595,890	4,909,654	5,672,276	589,636	701,279	5,875,184	6,671,603
Pennsylvania	421,314	545,023	4,305,330	4,126,901	480,920	637,052	4,953,554	4,870,961
Erie R.R.	539,375	594,488	5,544,580	5,484,380	623,383	708,007	6,409,638	6,524,667
N. Y., O. & W.	100,888	183,322	1,404,665	1,518,372	132,291	209,227	1,635,766	1,696,187
Lehigh & N. E. R.R.	207,325	.....	1,737,066	.....	279,252	.....	2,098,486	.....
Total	5,005,552	158,678	48,132,672	1,201,569	5,943,331	177,115	56,202,554	1,354,944
*Deduction	26,675	.....	251,184	.....	73,127	.....	401,934	.....
Total	4,978,877	5,686,704	47,881,488	47,417,371	5,870,204	6,683,007	55,800,620	55,239,947

* Deduction: Tonnage reported by both C. R.R. of N. J. and L. & N. E. R.R.

NORFOLK & WESTERN

Destination of shipments over this road for September and the first nine months of last year and this year were as follows, in short tons:

Coal	September 1915	September 1916	Nine Months 1915	Nine Months 1916
Tidewater				
Foreign	430,053	279,571	3,064,596	2,722,062
Coa'w'se	259,128	330,907	2,439,292	2,733,557
Dom'tic	2,255,551	2,404,450	16,130,141	20,637,460
Coke				
Foreign	4,621	3,939	23,080	42,760
Domestic	71,762	150,537	645,198	1,492,926
Total	3,021,115	3,169,404	22,302,307	27,628,725

LAKE SHIPMENTS

Shipments through the Sault Ste. Marie Canals for October and the seven months of this year and last year compare as follows:

	October 1915	October 1916	Seven Months 1915	Seven Months 1916
Hard	260,188	279,350	1,708,922	1,888,831
Soft	1,643,283	1,457,717	9,749,346	12,487,895

EXPORTS BY DISTRICTS

Exports of domestic coal and coke from the United States and bunker coal laden on vessels engaged in the foreign trade, at the specified districts, during the month of September, 1916, was as follows:

Districts	Anthracite	Bituminous	Coke
Maine and New Hampshire	353	.....	.....
Vermont	1,395	5,788	21
Massachusetts	564	.....	.....
St. Lawrence	84,477	118,825	1,489
Rochester	48,188	189,123	31
Buffalo	198,966	190,777	39,681
New York	6,800	1,012	2,447
Philadelphia	1,661	98,349	1,276
Maryland	.....	96,680	9,270
Virginia	.....	423,623	3,674
South Carolina	.....	6,009	2,708
Florida	.....	.....	25
Mobile	.....	1,830	.....
New Orleans	8	1,210	53
Laredo	.....	5,371	1,181
El Paso	87	6,330	.....
Eagle Pass	.....	1,294	438
Arizona	.....	6,657	15,996
Southern California	.....	29	.....
San Francisco	.....	.....	485
Washington	.....	79	4,271
Alaska	.....	85	.....
Dakota	1,434	4,325	842
Duluth and Superior	105	3,292	109
Michigan	.....	59,027	11,291
Ohio	9,469	785,638	283
Total	353,507	2,003,353	95,571

BUNKER COAL

	Gross Tons
Maryland	53,932
New York	304,331
Philadelphia	46,632
Virginia	182,980

Foreign Markets

GREAT BRITAIN

Nov. 2—There is little or no change to report in the coal situation. During the week very severe gales have been raging round the coasts and the consequent delay to tonnage has made it possible for buyers to pick up here and there cheap parcels of standing coal, disposed of to clear railway wagons.

Best Welsh steam	Nominal
Best seconds	Nominal
Seconds	$10.80@11.04
Best dry coals	10.08@10.20
Best Monmouthshires	10.56@10.80
Seconds	9.60@9.84
Best Cardiff smalls	7.20@7.32
Cargo smalls	5.04@5.16

The prices for Cardiff Coal are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—The freight market is still characterized by inactivity. The Mediterranean limitation of Freight Scheme came into force on Nov. 30, but is not yet in full working order. The limitation rates are marked thus:

Gibraltar	$6.96	Port Said	$14.40
Marseilles	14.04	Las Palmas	6.36
Genoa	14.28	St. Vincent	7.20
Naples	13.80	River Plate	6.96
Alexandria	15.00		